FEB 25 1925

The Journal
OF THE
Michigan State Medical Society

ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

VOLUME XXII—No. 11
WHOLE NUMBER 255

GRAND RAPIDS, MICH., NOVEMBER, 1923

YEARLY SUBSCRIPTION, $5.00; SINGLE COPY, 50c

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Office of Publication, Powers Theatre Building, Grand Rapids, Mich.

Entered as second-class matter March 12, 1913, at Grand Rapids, Mich., under the Act of March 3, 1879. Acceptance for special rate of postage made under Article 1103, October 3, 1917 and authorized August 7, 1918.

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Vol. XXII GRAND RAPIDS, MICHIGAN, NOVEMBER, 1923 No. 11

Original Articles

REMARKS UPON SO-CALLED ARTHRITIS DEFORMANS*

(Rheumatoid Arthritis)

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There is probably no disease which is more common and more obscure than the group known widely as Arthritis Deformans. Any review of medical literature shows the great confusion of ideas which has come about through the use of terms which have descriptive significance at times, at other times have a pathological significance. The old term "rheumatic," or "rheumatoid" has been used in the nomenclature so loosely that it is almost impossible to determine just what any individual author is describing. Nevertheless, in spite of all the confusion of terms, a perusal of recorded cases from different parts of the world shows that the disease is quite similar the world over. The more one studies his cases, the more he himself becomes confused by the multiplicity of types.

It is helpful to classify disease, as it serves sometimes to differentiate types which are similar but do not belong to the disease in question This is demonstrated in the case of arthritis by the separation of gout from the chronic joint diseases. On anatomical grounds, the atrophic form of arthritis was sharply separated from osteo-arthritis by von Volkman many years ago. Since that time these anatomical differences have been recognized universally, but the etiological factors are still a matter of profound obscurity in spite of the great amount of work which has been done in the attempt to clarify the causes of the various forms of chronic arthritis. Some, like McCrae, go so far as to say that all the chronic joint diseases are the result of some low grade bacterial infection. Others do not believe this, but admit that there is at least one type, possibly more, which is the result of infection. Llewellyn Jones avoids the predicament of classification by the comprehensive, descriptive term Arthritis Deformans.

In spite of the many attempts which have been made to isolate offending bacteria from the joints, no great success has resulted. A variety of bacteria have been described, but the very fact that there have been so many organisms implicated speaks for the lack of knowledge of the real causative agent. It is, however, generally held today that those forms of arthritis which seem to be of infectious nature other than those due to common types of staphyloccocci, pneumococci, gonococci, tubercle bacillus, etc., are due to toxines elaborated by non-hemolytic types of streptococci.

In order to get a little deeper into the subject, it might be well at this point to define our terms and to give a tentative grouping of the cases as they seem to occur among the patients. A number of classifications have been put forth, which has added to the confusion. For example, Barker, in an article read before the seventeenth International Congress on Medicine, reviews elaborately the whole subject and makes a rather extensive clinical classification. He does this after having classified the disease on anatomical and on X-ray grounds. Ely divides the cases into two groups, type I and type II. Under type I, he would put all the definitely known infections which involve the joint, such as tuberculosis, syphilis, pneumococcus, etc., and would include also the so-called Stills disease (what the English call arthritis deformans in children) and also what he calls rheumatoid (atrophic proliferative) arthritis. Under type II, which he calls the malignant type, he puts all the other forms. This is what the Germans call arthritis deformans, the English call osteo-arthritis, the Americans, led by Goldthwaite, call hypertrophic arthritis. Goldthwaite has probably the simplest classification, although there are sub-groups under each one of his three types. He classifies the various diseases into acute infectious arthritis, atrophic arthritis (arthritis deformans, rheumatoid arthritis), and hyperthropic arthritis (osteo-arthritis). Llewellyn Jones classifies the cases very much like Goldthwaite does, dividing them into; first, rheumatoid arthritis or atrophic arthritis; second, osteo-arthritis or hypertrophic arthritis;

*Read at the 103rd (58th) Annual Meeting of the Michigan State Medical Society, Grand Rapids, Sept. 11-13, 1923.

and third, infective arthritis. However, in his book Jones uses the title "Arthritis Deformans" to include all forms of joint diseases which cause deformity of the joints except those of known bacterial etiology. Many other classifications have been given, which it would be of no value to mention, as it would but confuse the issue. It seems to me that simplicity should always be sought, and that a classification which is as simple as is compatible with the subject, is, for the present, in the inaccurate state of our knowledge, certainly the best. I will, therefore, adopt Goldthwaite's or Jones' classification, dividing them into:

First—Chronic infectious arthritis
- (a) Following upon an acute polyarthritis.
- (b) With gradual onset.
- (c) Still's disease.

Second—Atrophic arthritis (rheumatoid arthritis, arthritis deformans).
- (a) Beginning in childhood, progressive in type.
- (b) Beginning in women about the menopause.

Third—Hypertrophic osteo-arthritis.
- (a) Mono-articular (malum coxae senilis).
- (b) Spondylitis deformans (types Marie-Strumpell, Bechterew).
- (c) Heberden's nodes.

I recognize that this grouping of the cases leaves much to be desired. Study of the case records of patients who have been in the University Hospital reveals the difficulty of placing certain cases in group I or group II. Should the type known as Still's disease be classed as chronic infectious arthritis, or as trophic arthritis beginning in childhood or early adult life? No focus of infection has ever been found which could be said to be the source of the infection, yet the disease with its fever, enlarged spleen and lymph glands could hardly be anything else than an infection with some organism of low virulence. In an analysis of fifty cases which were in the University Hospital during 1922, I found it quite impossible to place some of the cases in the groups here given. After long study of the histories and X-ray plates the cases were grouped as follows:

Group I.—21 cases, of which 2 (ages 14 and 23) were striking and typical examples of the group called Still's disease.

Group II.—15 cases.

Group III.—14 cases.

In group I. there were 12 males and 9 females whose ages ran from 13 to 55 years. In group II. there were 10 females and 5 males, whose ages ran from 25 to 56 years. In group III. there were 9 males and 5 females whose ages ran, males 36 to 63; females, 49 to 78. There were features common to both groups I. and II. In some of the histories the onset was said to be in the knee or ankle. From that beginning other large joints were involved and finally the small joints were affected. Why some had marked deformity and others did not, could not be told from the histories. Lack of accurate description of the hand and finger deformities also rendered quite impossible the definite grouping into types. Then add to this the fact that there are apparent gradations even between the atrophic and hypertrophic forms usually so distinct, and the confusion is great. This is surely an almost unploughed territory and invites intensive working.

The first group might be called the secondary form. It is in this group that the majority of authors believe infection plays the important role. Usually the infection is in some part of the body removed from the joints, what has come to be known as chronic focal infection. The seat of these focal infections may be almost any part of the body, including the teeth, tonsils, accessory nasal sinuses, ears, gall-bladder, appendix, tubes in women, and prostate gland and seminal vesicles in men. Among all these foci of infection it would appear that the tonsils or teeth were more often the sources. In this secondary form the disease often begins as an acute polyarthritis in one or more of the small joints of the hands or feet. It rapidly passes from joint to joint until practically every joint in the body is swollen, slightly hot, faintly pinkish or not, and very painful on motion or palpation. There is fever, sweating and great discomfort. Occasionally there is effusion into one or more joints, although the swelling is characteristically in the periarticular tissues. Striking features which serve to differentiate it from acute rheumatic fever, which it sometimes closely simulates, are early and marked atrophy of the dorsal interossei muscles of the hands, and involvement of the phalangeal joints. Salicylates have no effect on this form, and it is doubtful if the heart or its membranes is ever involved. It may follow at once upon an acute attack of follicular tonsillitis or acute pharyngitis, or it may suddenly occur after a number of attacks of tonsillitis or pharyngitis. Sinus disease and abscessed teeth, or other foci of infection may be causally related to the arthritis. No bacteria have been consistently found, but non-hemolytic streptococci have been isolated from the abscesses at the roots of the teeth, or from tonsils or sinuses, and occasionally observers have found streptococci in the joint fluid obtained by puncture. Rosenow, as all know, claims a specificity for non-hemolytic streptococci, and claims to have produced similar joint lesions in animals to those found in man with organisms grown from various foci, especially from tonsils and apical abscesses. If the disease does not clear up under active treatment, it may become chronic, and deforming changes take place leading to atrophy of the

bone ends and of the cartilages with deformity. Often, however, the process ceases in one joint only to recur from time to time in others, even after the original focus of infection has been removed, indicating, in all probability, local foci around the joints which are incapable of being influenced by treatment. Eventually the process heals itself, the deformities are more marked in some joints than in others, and do not show as a rule, a perfectly symmetrical arrangement.

The other sub-group of this form is probably infectious, although no organisms have ever been found. The disease begins insidiously in one or more joints, usually a wrist or ankle. There is rapid wasting of muscles out of all proportion to the involvement of the joints; there may be more or less pain; there is no redness of the tissues about the swollen joints; there is a low febrile reaction, with enlargement of the spleen and noticeable swelling of the lymph glands. The swellings of the wrist are fusiform in type. The swellings of the knees have a peculiar globular appearance. Very early the temporo-maxillary articulation is involved and often the sterno-clavicular articulation also. The deformities which follow this type are most distressing, resulting in absolute crippling of all joints in the body, with the inability to open the mouth more than a half inch or so, making the taking of food quite difficult. The muscular wasting in this type is profound. Many have thought that the fact that there is so much muscular atrophy occurring so rapidly speaks for involvement of the trophic nerve fibers from a central origin. Some have called attention to the great similarity between this muscular atrophy and that of progressive muscular atrophy, in which it is known that the anterior horn cells are involved. A peculiar segmental distribution of atrophy is frequently seen in the type not quite so severe, which also seems to point toward the primary involvement of the spinal cord. Our absolute ignorance of the true nature of this process stimulates the imagination, but brings us no nearer to facts. My imagination conceives it probable that infection is at the bottom of this, and that the joint symptoms, the spinal cord symptoms, which result in rapid muscular wasting, have the same operating cause. In this group just described I would place the so-called Still's disease, which is not confined as Still originally described it, to children before the second dentition. I am sure we have all seen cases which have had their onset from fourteen to eighteen years of age, or even slightly older. In these cases, although the most careful search is instituted and use is made of all the methods which we have at present, no focus of infection can be found. It is thought by some that this type is of intestinal origin. It is, however, only a thought, for no one has ever been able to show definitely the relationship between this so-called intestinal toxemia and the development of arthritis. The X-ray changes in these joints are osteoporosis of the bone ends, atrophy of the cartilage, and occasionally slight hypertrophic changes shown by delicate spicules. Further, there is not infrequently a fibrous or true bony ankylosis, and there are also marked subluxations of the joints, deforming them in most bizarre fashion.

The second group might be called also primary, in the sense that we use primary anemia. It is chronic from the beginning; it occurs usually in women under forty; and the early symptoms are often tingling in the soles of the feet, indefinite pains in the arms or legs, sometimes pain in one joint, which may cease only to recur. Gradually the joints of the hands, wrists, feet and larger joints are involved. The skin becomes shiny and smooth, even to the production of the condition known as scleroderma. Contractures of various kinds occur, which in the hands produce the so-called claw-hand, with ulnar deflection. Subluxation of joints is frequent, so that the deformity may be great enough to preclude all possibility of use of the hands. Occasionally scleroderma precedes the arthritis, particularly the form known as sclerodactylia. There is sometimes marked atrophy of the muscles in this form; again the muscles are not so wasted. All the large joints are apt to be increased in size, the wrists show typical fusiform swellings, which show no bony outgrowth, but are the result of periarticular thickening. X-ray films of such joints show a very similar picture to the first group, although the proliferative changes do not seem to be quite so common. In the wrist joints there is a peculiar appearance of the bones as if they were crowded together, what the Boston school calls "telescoping of the joint."

A second sub-group of this form I have only seen in women near or following the menopause. There is considerable pain in one or more joints, rapid disablement of the individual, without, however, the peculiar muscular wasting, although there is general loss of weight. The skin over the joints is flabby, the tissues feel mushy, walking is impossible on account of pain and weakness, the hands are distinctly weak, and yet the patients may be able to do fine needle work. Certain of the joints become subluxated, others are definitely swollen, but there is not the marked deformity seen in the cases of the first sub-group. Further, there is no fever or enlargement of the spleen, and the case is hopelessly progressive from the beginning. Patients can often not turn over in bed alone on account of both pain and inability to move the legs, but when placed in a wheel chair they may be able to sit there fairly comfortably

for hours at a time. This sub-group, I should say, is not very common. Whether or not this group is the result of some low-grade infection it is impossible to say. The same thing may be said about this group as about the previous group; namely, that it may be due to a poison elaborated in the intestines. This, however, is purely conjectural. If we consider this group as some metabolic disturbance arising from some unknown intestinal condition, we may then consider this group to be due to infection. Eventually I believe we shall find that this group has some such cause. One peculiar feature of all the cases of chronic joint disease of the two forms briefly outlined above is the definite lowered sugar tolerance to oral administration of glucose. It is found in both groups and apparently is not found in cases of acute or chronic rheumatic fever. Pemberton lays great stress on this reaction and suggests diet low in carbohydrate as a logical procedure. Many case reports are now available for study, but analysis of them does not convince me that Pemberton is entirely correct.

The third group, the hypertrophic group, seems not to be the result of infection, although there is some difference of opinion, some maintaining that it is the result of a low grade infection from some focus somewhere in the body. However, it more often occurs in healthy people, in men more often than in women, and trauma seems to have some place in the causation. Changes in the bones and cartilages are quite different from those of the other groups. It would seem to be primarily a cartilaginous change, secondarily involving the synovial membranes, producing eventually atrophy of the cartilages in the centers with new bone formation and eburnation of the joint surfaces, with hypertrophy of cartilage and deposition of bone at the edges of the joints. These serve to limit the motion of the joints, but rarely is true ankylosis found. It is said by Jones, for example, that bony ankylosis never occurs in this type. I have X-ray photographs, however, which certainly show bony ankylosis, and which I could not say belong to any other than this particular type of arthritis. I am sure that the bald statement that ankylosis never occurs is not correct. Changes in the knee joints indistinguishable by the X-ray from changes in hypertrophic arthritis are found in people, particularly women, who later in life become obese. Here it would appear that constant irritation can produce hypertrophic changes around the cartilages of the joints. In the spine the vertebrae are attacked, and forms have been separated based upon the part of the vertebral column which is involved. It seems, however, that this distinction is purely arbitrary. The process may be insidious, with gradual stiffening of the whole spine, with bony outgrowth, and, in some instances, actual calcification of the spinal ligaments, producing a rigid bony column from the occiput to the coccyx. The sacro-iliac and hip joints are apt to be involved in this process, especially if the process begins in the lower spine. There is no fever; the progress is a gradual one, lasting over many years. It may occur without any pain, or there may be considerable pain in the back and down the legs. In the form in which one joint is involved in the first sub-group it is usually the hip. The third sub-group, characterized by peculiar bony outgrowths upon the distal ends of the second phalanges of the hands and feet, known as Heberden's nodes, I think should be placed in this group of hypertrophic arthritis. Often this is the only bony change found and, except that it produces slight clumsiness in the use of the fingers, is not accompanied by pain or other disability.

TREATMENT

After all, we may squabble among ourselves as to the groups and causes of the various groups of chronic joint disease, but this does not interest the patient who comes to us for relief. He wants to know, not what our classification is, but what we can do to relieve him of his disease and make him well. I think we must all confess to a feeling of inadequacy when we come face to face with the treatment of one of these types of chronic arthritis. However, I do not believe that we should feel so hopeless. It seems to me that we can do a great deal for these afflicted people. First and foremost, we should make a diagnosis as early as possible and start treatment, not half-heartedly, but with the idea that if we do not treat them intensively we shall get nowhere. In the cases frankly the result of infection, as in the first group, the procedure would be as follows:

Remove foci of infection at once; immobilize joints that are inflamed; use actinotherapy and dry heat. As the joints improve, Bier's hyperemia is at times valuable. I have found that cinchophen relieves the pain much better than any other drug, except, of course, morphine or codein. I prefer not to give morphine unless it is absolutely essential. I believe it is advisable also to push fluids and to give sodium bicarbonate. I have no scientific reason for this, but it does seem to assist in relieving the condition. Codliver oil is given as a routine to the infectious and atrophic cases. The patient should be fed nutritious food of any kind. Buttermilk made with the B. Bulgaricus has seemed to me to help materially the cases of the first and second groups. The change in the intestinal flora produced by feeding large quantities of this lactic acid producing organism may account for its therapeutic value. Its true action is unknown. The beneficial result is often, however, very striking. Even if there is fever I do

not limit types of food except those which are frankly indigestible and are not to the patient's taste. Under this regime I have seen cases markedly improve.

When we come to treat the cases in which no focus of infection whatsoever can be found and there is fever, I believe the first and most essential part of the treatment is absolute rest in bed. The patients are so apt to think that they should walk around and exercise the joints that it is difficult to keep them in bed. A highly nourishing diet, including Bulgarian buttermilk, massage of the muscles, with only slight rubbing of the joints, actinotherapy, Bier's hyperemia, and dry heat, in my eyperience, have given some results. Every effort should be made to prevent contracture deformities. I am aware that some have used thymus gland preparations, and other organ preparations, and have claimed to get results. I have seen one case of arthritis with generalized scleroderma in a young woman who seemed to be benefited by doses of thyroid extract, but the case was so hopeless when it came under our observation that little could be done to help her. In the early stages, however, I think thyroid might be tried. When the cases are seen in their chronic crippling forms, especially those types in which there is no evident infection, the same treatment is given; that is to say, treatment by massage, dry heat, etc. For the chronic forms who are in a good state of nutrition a sojourn at one of the spas, whether it be hot water or hot mud, seems to relieve the condition. One form of treatment, which has been used and which I, myself, use extensively, is the non-specific protein therapy. I have used, for the most part, typhoid vaccine, but I can not say that I have ever seen a case permanently benefited by the treatment. It is possible that if we saw the cases earlier the leukocytosis produced by the injection might be a factor in combatting the low grade infection. It has not been my fortune to see very early cases. While temporary benefit has resulted from the injections in the chronic cases, so that patients unable to use their joints before the injection move them around freely the day following the injection, the good result has not been more than temporary. The greatest number of injections which I have given to any one individual was twelve. Every time there was a violent reaction and slight improvement within 48 hours, but after two or three days the condition was the same as before. For the hypertrophic forms heat in all forms seems particularly helpful, and I have seen lessened pain and increased motion follow long continued use of Bier's hyperemia. However, when bony changes have taken place it is impossible to bring the parts back to their original condition, and the best we can hope to do is to give symptomatic relief. In many cases of all types in which there are great deformities, orthopedic treatment can straighten out the joints and sometimes by operation in the mono-articular forms enable the patients to get around again with some degree of comfort. In the cases of spondylitis, orthopedic jackets often give great relief.

Finally, as I have said above, I do not feel absolutely hopeless when I see one of these patients. I am convinced that, if we do not use all the means of which we know to relieve these afflicted individuals, we shall find them drifting, as we have already found them drifting, into the hands of the various quacks, and sometimes, to our utter astonishment and to our shame, the quacks give them a great deal of relief, which we should have given them. We should not view with disdain forms of mechanotherapy. Our superstitious loyalty to drugs has caused us to lose sight of the fact that treatment of disease is any method which will help the patient to rid himself of his disease. First let us be sure we know what disease we are treating, then let us not only treat the disease by any means at our command, but let us not neglect to treat the patient who has the disease. If we steadfastly bear these fundamentals in mind we shall be more successful in the treatment of the chronic arthritides.

NOTE—For an excellent review of the history of arthritis, see L. F. Barker's "Differentiation of the Diseases Included Under Chronic Arthritis," 17th International Congress of Medicine, London, 1913.

THE DIAGNOSTIC VALUE OF THE X-RAY IN OBSTETRICS*

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The object of this paper is to predicate the fact that the X-ray is of real value as a diagnostic aid in obstetrics, and to urge upon general practitioners who in this state are doing a large share of the obstetrical work to avail themselves of this valuable adjuvant. We desire also to recommend a greater collaboration with the roentgenologist, for it is only by cooperation between the obstetrician and the roentgenologist that effective work can be developed in this comparatively new field of research.

The history of the development of the X-ray in regard to the foetus in utero extends over a period of about a quarter of a century. Mullerheim of Leipsic, in 1899, is credited with being the first person to show successful roentgenograms of the foetus in utero. In 1903 Sjorgren of Sweden differentiated for the first time between normal and extra uterine preg-

*Read before the Section in Gynecology and Obstetrics. Annual Meeting of the Michigan State Medical Society Grand Rapids, Mich., Sept. 13, 1923.

nancy. In 1912 O'Donnell of Chicago made the statement that a diagnosis of pregnancy could be made by X-ray as early as the fourth month. McLean and Hickey of Detroit in 1911 diagnosed pregnancy in a very fleshy woman who weighed 250 pounds. Case of Battle Creek in 1916 successfully diagnosed a case of anencephaly before birth. McKenzie in 1918 attempted pelvic measurements by the use of the X-ray and was partly successful. Prior to this time one of the writers collaborated with a roentgenologist with the hope of accomplishing something positive in determining the actual size of the pelvis by the X-ray, but without success. The work of Warnekros in Berlin, and Weibel in Vienna in 1918, has been revolutionary. Working contemporaneously they demonstrated how the placenta separates from the uterine wall during the third stage of labor, and by injecting an opaque substance into the umbilical vein after severing the cord they were able to demonstrate that the placenta commences to separate from the uterine wall just as soon as the second stage of labor is completed. Edling, who has had a large experience in roentgenology of the foetus, states that it is possible to obtain good roentgenograms as early as the third month, while Kuegle goes so far as to state that at this age the two femora, the umbilical cord and even the placental attachment may be clearly shown. The above statements, according to our experience, are unbelievable. In a recent personal communication from five of the leading roentgenologists in this country, no claim was made that a positive diagnosis of pregnancy could be made by the X-ray before four and one-half months. Peterson states that by the X-ray pneumo-peritoneum method a diagnosis of pregnancy can be made from the sixth to the tenth week.

The difficult part of obtaining satisfactory photographs of the foetus in utero are numerous. The foetus is a movable body and the picture must be taken with the object some distance from the plate. The abdominal wall and the bony parts of the pelvis make this work very difficult; furthermore, it is difficult for the pregnant woman, when the pregnancy is advanced, to assume the proper positions necessary to obtain a good picture, and it is almost impossible for the pregnant woman, especially when she is nearing full term, to hold her breath, which is so necessary in this work. The Potter-Buckey diaphragm has been of great benefit and recently a superspeed film has facilitated this work.

It seems to us that the greatest value of the X-ray as a diagnostic aid in obstetrics is in the determination of abnormalities, such as anencephaly, hydrocephaly, multiple pregnancy, pseudocyesis, deformities and growths of the bony pelvis, and especially in the detection of the finer defects which produce foetal and maternal dystocias which are unrecognizable by any other method.

It is timely, however, to accentuate the thought that one must not lose sight of the well recognized text book methods for the diagnosis of pregnancy. These elementary signs are too frequently forgotten and we are constantly surprised that ordinary normal pregnancy is so frequently mistaken for other conditions, even when it is sometimes quite far advanced, and as our experience and observation increase we are more and more convinced that the average physician is not as keen in the diagnosis of pregnancy as he should be. Normal pregnancy can almost invariably be diagnosed by a careful physical examination before it can be demonstrated by the X-ray, notwithstanding the statement of Stein and Arens that roentgenography of the foetal skeleton is the only positive sign of pregnancy possibly obtainable before quickening.

The following case reports from an ordinary obstetrical service have proven to ourselves the value of the X-ray in obstetrical diagnosis, and we reiterate that the attention of the profession should be called to the fact that in obstetrics the X-ray as a diagnostic agent is of extreme value, and furthermore, that by its general and judicious use the lives of many mothers and babies may be saved annually.

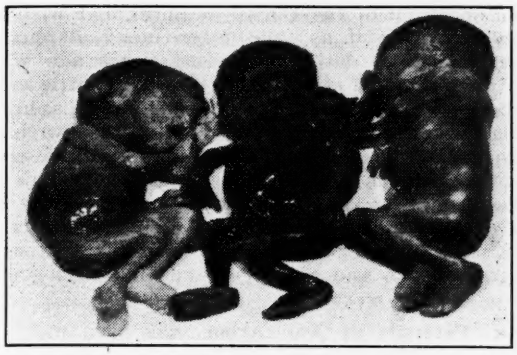
We are using it as a routine in every case where we have reasons to suspect any abnormality. The following brief case reports of a few of the abnormalities we have been able to diagnose by the use of the X-ray may be of interest.

CASE REPORTS

Case 1. Ten days before expectant time of delivery we made a diagnosis of breech presentation in a multipara, which was verified by roentgenogram. By the time that labor commenced the child had assumed a normal anterior position and was so delivered without incident.

Case 2. We saw in consultation a child 13 years of age in which the attending physician had made a diagnosis of pregnancy about the fifth month. The innocence of the child and its parents as to even a possibility of exposure made it seem almost unbelievable, but the tumor which this child presented was that of pregnancy. The diagnosis was absolutely clinched by a foetal roentgenogram and this child was delivered by abdominal section at full term without ever knowing the nature of her condition.

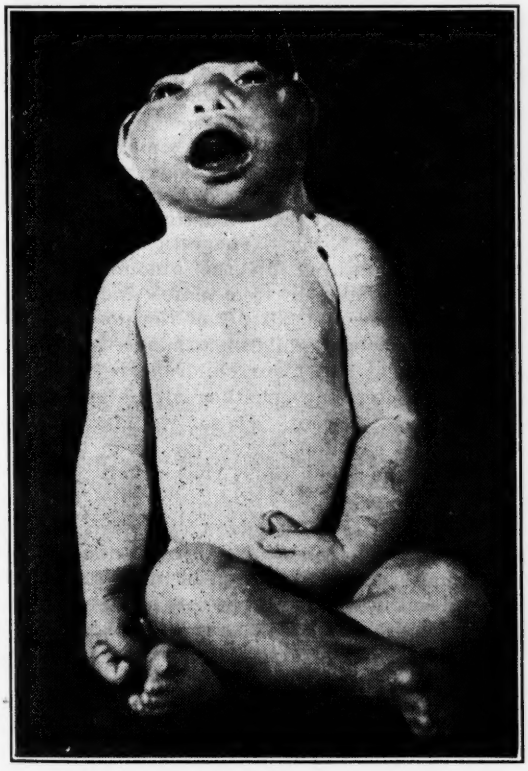
Case 3. A case of hydramnion with triplets in which a diagnosis was made from the X-ray by foetal roentenogram. A short time after the roentgenogram was obtained the mother went into labor and gave birth to three small triplets which, according to the history, were about seven months advanced. The film in this case showed three circles, each about 5 centimeters in diameter, which was the only evidence of skeletal development, but which indicated three heads by which a diagnosis of triplets was made.



Triplets with Hydramnois.
Diagnosis at six months by X-ray.
Patient mis-carried at six and one-half months.

Case 4. Twin pregnancy positively diagnosed by the fifth month. Three weeks before expected time of delivery, patient consulted us because she felt very little foetal movement. Auscultation by head stethoscope demonstrated distinctly one foetal heart beating 160 times a minute. Three days later no foetal heart could be heard and no movement could be demonstrated. Three days later foetal roentgenogram was made showing that the foetuses had grown in a normal manner as compared to the roentgenogram taken three months before. The later film, however, showed a slight overriding of the parietal bones and a slight irregularity in the shape of the skulls. This irregularity in the skull, according to Spaulding of San Francisco, who has reported a few similar cases, is a positive sign of death of the foetus in the utero, and if it is a fact, as Spaulding states, that these changes occur after the death of the foetus in utero, and if it is a fact that they can be recognized by roentgenography, the value of this observation is obvious.

Case 5. Case of anecephaly (Case report accepted for publication, American Journal of Obstetrics and Gynecology, August, 1923), in which a probable diagnosis was made by physical examination, positively verified by a very clear roentgenogram. Patient had gone two weeks overtime and since positive diagnosis was made by the X-ray, labor was induced by an introduction of a Voorheis bag and an anencephalic monster was born which lived six hours. At the present time this same woman is six months pregnant and we have a foetal roentgenogram which shows distinctly that the child has an apparently normal skull formation which was observed before the fifth month.



Anencephaly.
Diagnosis by X-ray before induction of labor.

Case 6. Patient in Blodgett Hospital in which a Cesarean section was performed this morning, the woman is 30 years of age, and five years ago lost her first baby by instrumental delivery. Foetal roentgenogram showed a good sized child, no skeletal deformity, cephalic presentation, head floating, right ocipital posterior position. This patient's pelvic measurements showed a moderately contracted pelvis. The patient having gone two weeks overtime, was hospitalized, given castor oil and quinine on two different occasions in an attempt to induce labor. Inasmuch as she was extremely anxious to give birth to a living child and inasmuch as she had a small pelvis, the space between the Ischial tuberosoties also being narrow, and inasmuch as the roentgenogram showed a good sized child with floating head, and in consideration of the fact that with a similar history five years ago she had lost her first child, and inasmuch as two attempts had been made to induct labor, a Cesarean section was performed. She was delivered of an eight-pound baby with a large head even larger than one would be led to believe from the appearance of the roentgenograph. In this case we feel that the X-ray was of considerable diagnostic value.

Recently we have noticed some literature which indicated that there is danger even in a single irradiation of the foetus for diagnostic purposes. Malformation, cases of arrested developments and even imbecility have been charged to the effects of diagnostic irradiation. While the idea of this unfavorable influence of the X-ray was not new to us we sent a questionaire to five of the leading roentgenologists in this country and received replies from all of them, in which they all agreed that with proper technique they considered roentgenology of the foetus devoid of any danger whatever. However, we deem it timely to suggest that these examinations be limited, owing to the possibility of developmental defects. In a personal communication from Dr. Preston M. Hickey, professor of roentgenology in the University of Michigan, he states that they have estimated that the exposure in a diagnostic roentgenogram of the foetus equals about 2/7 of the therapeutic thymic dosage used for infants in the first 48 hours of life, and from this, thinks that it would be impossible to do any harm to the lymphoid tissues of the foetus in utero.

One of the advantages of roentgenography of the foetus is that one can, to a great extent, allay the anxieties from which so many expectant mothers suffer as to the possible condition of the child, and it is obvious that any measure that will improve the mental attitude and morale of the mother is of value.

Our experience in this work has taught us that the expectant mother is very willing to submit to the X-ray for diagnosis, and appreciates the interest which is taken in her case, whether the results from roentgenography as to the findings are favorable or unfavorable.

The possibilities of future development in foetal roetngenography are interesting. We can see how it may become of great value in adding to the interest of the study of obstetrics in teaching medical students and nurses. We believe that it may be possible with increasing experience and improvement in apparatus and technique to visualize the various stages of labor, and it may be that in the near future the various manipulations incident to labor, as for example, version both external and internal and delivery by forceps may be done under the fluoroscope. Undoubtedly with continued progress in this work and with proper collaboration between the obstetrician and the roentgenologist many of the finer defects which produce dystocia and which are being overlooked at the present time will be recognized and this information will help to decide the safest method of delivery in many borderline cases which at the present time present some of the most difficult problems for solution that are to be met in any field of medical or surgical work.

SUMMARY

1. The X-ray is a valuable diagnostic aid in obstetrics.
2. There should be greater collaboration between the obstetrician and the roentgenologist.
3. The chief value of roentgenography in obstetrics is in the determination of abnormalities.
4. There seems to be no danger to the foetus in a diagnostic irradiation under proper technique, but we advise against repeating it any oftener than is necessary.

DISCUSSION

DR. P. M. HICKEY, Ann Arbor: The first thing I will do is to take issue with Dr. Campbell on one little thing. He said it was necessary to interest the X-ray man in the question of obstetrics. My problem has always been to interest the obstetrician in Roentgenology. I read a paper some years ago on that topic and some years later Dr. Judd of Detroit, and I, did some work on it, but the average obstetrician only took an interest in Roentgenology when he had a patient so fat that he could not make a bimanual examination. Then he turned the patient over to the X-ray man.

Another very interesting point is the question of differential diagnosis between dermoid cysts and pregnancy. That has been made a number of times because in pregnancy you get the definite bony structures, whereas in the dermoid cysts, if there are teeth you can get definite shadows which will give you the exact diagnosis. In one case an operator telephoned me in great perturbation saying that he could only find six instead of seven of the teeth I spoke of in the ovarian cyst.

In speaking of the Bucky diaphragm, I wish you would refer to it as the Potter-Bucky diaphragm. Bucky made a diaphragm some years ago which left such marked streaks that it was of little value, while Potter of Chicago got up a modified diaphragm which was a great improvement and we always like to speak of this as the Potter-Bucky and give credit where credit is due whenever possible. This enables us to ray the deeper parts of the body and get detail which before its development it was impossible to do. The film which permits an exposure of two or two and a half seconds has also greatly simplified the work.

Dr. Peterson of Ann Arbor, has been much interested in the value of the X-ray in obstetrics and we have been glad to co-operate with him in his work. Dr. Peterson is interested not only in the question of such cases as Dr. Campbell mentioned, but also from the standpoint of teaching. If you take a picture of a case just about to undergo delivery and can put up that picture so that the students can see the position of the infant just a few hours before birth, I think that makes the interest much greater. Furthermore, we have made plates during delivery by taking a portable machine and putting it in the delivery room. One case was rather striking as it showed the passage through the os. The positions we have found most advantageous are the postero-anterior position, the woman lying on her belly. We have also used the antero-posterior and the posterior positions. We have been able to get stereoscopic plates of these cases and it adds much to be able to look at them in this way. We were favored by a visit from Professor Edling of Lund, Sweden, who has been working on this problem for years. He had a number of plates and a number of sets of twins, two of triplets, and a number of monstrosities which he had demonstrated by means of the X-ray.

I fully agree with Dr. Campbell that it seems to be a great satisfaction to patients to have a demonstration made to them before delivery of a normal foetus. If they can be assured that there is no malformation of the foetus as shown by the photograph they are perfectly willing to assume the financial aspects of the case and have the examination made.

With regard to the danger of using the roentgenogram in obstetrical problems, I wish to emphasize what has been said—that so far as we know there is no danger. With a formed foetus I do not see how you can change the structure by a short exposure with the X-ray. Theoretically that is not possible. We figured up the amount of dosage which the child gets in four plates and we figured that the foetus would get 2/7 of the dose which we give to the new-born children who are given thymic treatment, as many of our children are rayed after delivery to determine whether an enlargement of the thymus is present. If so, we give a certain dosage of the ray and the dosage given to children 24 hours old is seven times that which they would receive in utero.

DR. E. D. PLASS, Detroit: I wish to know whether there has been any intrauterine diagnosis of the bone lesions in children of syphilitic parents. I have never seen anything of this kind, but in postnatal plates you are able to get a perfectly definite shadow and I wondered if anything had been worked out in a prenatal way.

DR. A. M. CAMPBELL, Grand Rapids, (closing): I wish to thank Dr. Hickey for his discussion and in reply to Dr. Plass, will say that we have had no personal experience with the demonstration of the bone lesions of syphilis.

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A CITY PROGRAM FOR THE CONTROL OF TUBERCULOSIS*

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DETROIT, MICH.

The rapid reduction in the death rate from tuberculosis during the past decade is undoubtedly due in a large measure to the various forms of anti-tuberculosis activities, including the progress made in sanitary reforms, improvement in the social wellbeing of the people at large, and to the untiring efforts of the various organizations purposely established.

In New York City the death rate from tuberculosis dropped 51 per cent during the past ten years. In the United States registration area it dropped 43 per cent, and in Detroit it dropped 28 per cent. In Rio Janeiro, a city of approximately 1,000,000 population, the death rate from tuberculosis in 1921 was 377 per 100,000, which was three times higher than that in New York City, and four times higher than that in Detroit. This is an enormous mortality and is undoubtedly due to the lack of any form of anti-tuberculosis work.

This comparative information clearly demonstrates the necessity for further intensive work against the disease in order to increase the reduction of the mortality which is still appallingly high.

In order to measure the scope of the tuberculosis problem in any given city it is necessary to obtain the approximate number of tuberculous individuals. This, of course, is a difficult matter and is a process of estimation only. The death rate from tuberculosis is the most accurate fact that is known about the disease and therefore the method of estimating the tuberculosis problem must be based on the death rate. If the number of tuberculosis deaths is multiplied by some "factor" the approximate number of living cases will be known. There are three crude factors now in common use, 3, 5 and 10. The factor 3 multiplied by the number of deaths was discovered by Dr. Newsholm of Brighton, England, and comprises the number of active cases. His work covers 25 years of compilation. The factor 5 multiplied by the number of deaths is the method of Dr. Biggs, the late health commissioner of the state of New York, and comprises the number of tuberculous individuals, including the non-infectious forms. His work covers approximately 25 years of compilation from New York city clinics. The factor 10 was developed by Dr. Phillip of Edinburg and covers all forms of tuberculosis requiring treatment. Recently in Chicago an experiment was conducted whereby 165,000 individuals out of a section of 300,000 population were examined and 1,000 positive sputum cases were discovered. This gives a ratio of 1 to 165, which is approximately equal to the Biggs factor.

After ascertaining the estimated number of tuberculous individuals in a given community it is interesting to know the degree of indigency associated with the disease. Among varied definitions of the work "indigent" the National Committee on Indigent Migratory Consumptives define the term as a person who does not finance himself completely during the period of his care. Some persons need only free medical and nursing care, others are in need of temporary aid, while many are dependent almost upon the community for their living and care.

Mr. J. S. Whitney, statistician of the National Tuberculosis Association, reports that a total of 7,319 tuberculous individuals in six cities of the southwest portion of the United States were cared for wholly or in part by municipal agencies. This meant approximately one indigent tuberculous person to every 155 of the entire popuation of the six cities. For example, Phoenix, with a population of 29,000, has the greatest number of indigent tuberculous persons, viz.: 1 to 58 of the population. Colorado Springs has 1 to 78; El Paso, 1 to 71; Denver, 1 to 156; Los Angeles, 1 to 186, and San Antonio, 1 to 264. Using Cleveland as a control, 3,443 tuberculous individuals were cared for during 1921, or 1 tuberculous person to every 231 of the population.

It would seem from these figures that the smaller the city, the greater the burden, and that apparently some organized force is necessary to approach this problem. Is it then a problem for the general practitioner to burden himself with the individual cases as they arise, or are philanthropic agencies the most successful in the combat of the burden? There are numerous private agencies which are doing splendid work in anti-tuberculosis activities, but it is usually due to lack of funds which pre-

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*Read before Section on Medicine, M. S. M. S., Grand Rapids, Sept., 1923.

vents the effectiveness of a thorough and successful campaign against the disease. A state control of the larger cities within its bounds is ineffective, due to the magnitude of the problem and insufficient funds.

Assuming, therefore, that a fairly large degree of indigency is associated with tuberculosis and that a considerable amount of relief is necessary in order to carry on a successful treatment which is of necessity prolonged, it would seem that municipalities should become more active in anti-tuberculosis work.

During a recent survey made by the American Public Health Association of anti-tuberculosis activities in the various cities of the United States, it was found that 13 cities out of 83 studied, conduct anti-tuberculosis work through a special bureau by the Municipal Health Department. A special fund is stipulated from the budgetary allotment and is utilized specially for anti-tuberculosis work.

The personnel of such a bureau should then be organized consisting of a full time director, preferably a physician, supplemented by part time physicians, one for every 100,000 population. The nursing staff should consist of three nurses for every 100,000 population, and a sufficient number of clerks to keep accurate records.

The city is then divided into districts allowing approximately 250,000 population for each district with a dispensary in each. Each dispensary should have a part time examiner and a sufficient number of field nurses. It should be equipped with clinic supplies and a complete set of records affiliating with the main dispensary. Clinic periods should be held in accordance with the demand usually from four to six periods per week, with a duration of two hours per period.

The sources through which patients come to the dispensaries are as follows: Reference made from general hospitals, through voluntary appearance, references made by physicians for diagnosis and hospitalization, through follow up work by the field nurses, through landlords and citizen reports, and through charitable societies.

The routine procedure on entrance of the patient to the dispensary should include a complete history, including the present illness, past illnesses, social, family and economic history, tuberculosis exposure, normal and present weights, temperature and pulse rate. The details can be ascertained by the nurse and recorded on the chart. The patient then undergoes a physical examination. If a diagnosis cannot be established on the first examination a period of observation is prescribed for further clinical evidence.

The functions of the dispensary are:

1. The establishing of accurate and early diagnoses.
2. The disposition of the patient.
3. The supervision and instruction of patients through the field nurses.
4. Visits to the homes of tuberculous individuals for the purpose of correcting unhygienic conditions and the protection of children in the home.
5. The selection of patients for the hospital and sanatorium.
6. The selection of exposed children for the open air schools.
7. The periodic examinations and follow up work of post sanatorium patients.
8. The home treatment of patients who do not enter the sanatorium.
9. The proper disposition of migratory patients who are not eligible for city care.
10. The use of the dispensary by private physicians for diagnostic purposes of early cases.

Similar to this plan we are conducting the work in the city of Detroit and during the year 1922 our budgetory allotment was approximately -56,000. Our personnel consists of one full time physician, seven assistant physicians employed as part time, twenty-one nurses and four clerks. Our total dispensary attendance was 23,083; number of new patients admitted was 5,660, made up of incipient tuberculosis 375, moderately advanced cases 592, advanced cases 224, exposures and observation cases 401, undiagnosed cases 2,775, undiagnosed exposures 1,183, individuals with no evidence of tuberculosis, 110. In the home treatment division 134 advanced cases were treated and relief given. One thousand two hundred and eight patients were hospitalized, of whom 523 entered the city hospital as advanced and moderately advanced cases, 616 entered the sanatorium and 69 were placed in the county hospital as county charges.

In order to derive the best results in a campaign against tuberculosis in a given community, three salient factors stand out as essential, viz.: First, the proper care and isolation of the open cases because it is only through such care that the patient can recover and further, because by such means a large percentage will cease to expel tubercle bacilli, which, after all, is the greatest aid in the prevention of the disease; second, the prevention of the spread of the disease by proper disposal of sputum and proper handling of everything coming in contact with positive sputum individuals; third, to keep the well well by the maintenance of a high resistance.

Theoretically, in any program for the control of tuberculosis in any given community there should exist one bed for every tuberculosis death. In the city of Detroit the death rate from tuberculosis in 1922 was 946. At the present time there are available in the city of Detroit 750 beds for the treatment of tuberculosis, including two private institutions. This leaves a shortage of approximately 200 beds.

Therefore as a means to carry out these three functions the sanatorium, the preventor-

ium and the open air schools play the most important part in a successful campaign against tuberculosis. The sanatorium not only offers a complete rest cure, but it also becomes a school of education which is 25 per cent of the treatment. A stay of two months will inspire the patient with ample knowledge and if need be, will aid him materially in the treatment in his own home. Those who desire to complete the sanatorium treatment, including the reconstructive period, will equip themselves once more for the industrial world for the purpose of making a livelihood and therefore completing the cycle in the realm of human usefulness.

As a further measure of prevention the preventorium is paramount . Too well do we know that tuberculosis infection takes its origin during childhood and if we can direct our efforts towards the wellbeing of the infected child we are doing no small amount of good towards the prevention of the disease during adult life. A preventorium with a capacity of 100 beds is essential in any city of medium size.

Next of importance are the open air schools with a capacity of from 60 to 80 children. These should be located at a given distance apart. They differ from the preventoria inasmuch as they are day schools and the child returns home for the night. The class routine is maintained similar to the regular class room, only the child is constantly under medical and nursing supervision. The noon day meal is provided, followed by one hour of bed rest. This opportunity should be extended to every child who has been exposed to actively diseased individuals for at least two terms of school life.

Another important element in a city control of tuberculosis is the enforcement of legislative measures such as:

1. The prompt reporting and registration of tuberculous individuals.
2. The disinfection and proper disposal of sputum.
3. The renovation and cleansing of premises after the removal or death of the patient.
4. An anti-spitting ordinance.
5. Compulsory hospitalization of careless tuberculous patients.
6. The pasteurization of milk for protective purposes.

With the enforcement of these measures a great deal can be done towards eliminating the disease.

The relationship of private physicians with any organized agency for the control of tuberculosis should be that of a mutual co-operation. In reporting a case of tuberculosis by the private physicians it should be stated on the report whether or not the patient is under his care and whether or not he desires the patient to be hospitalized. There are a certain number of patients who can afford to be treated by their private physician during the entire course of the cure. In such an instance it is not necessary for the agency to interfere. The proper instructions to the other members of the family can be given by the physician. However, it frequently occurs that patients discontinue treatment with their physician and in order to maintain the whereabouts of such patients it is advisable to send out questionnaires every six months, and in the event they are under no care it is well to inform them through the nurses of the necessity of being under further medical treatment. In this manner a constant vigilance may be maintained over all tuberculous patients.

SUMMARY

1. The reduction of the tuberculosis mortality is apparently due to the various anti-tuberculosis activities.
2. The scope of the tuberculosis problem is measured by the number of tuberculous individuals in a given community.
3. Of the various anti-tuberculosis agencies it would seem the municipalities should become more active.
4. The division of the city into districts with a dispensary in each district.
5. The efficiency in the functioning of the dispensaries.
6. In a campaign against tuberculosis three factors are essential, viz.: The proper care of the sick, the prevention of the spread of the disease and to keep well.
7. The sanatorium, preventorium and the open air schools play an important part in the control of tuberculosis.
8. The enforcement of legislative measures is a material aid in tuberculosis work.
9. The establishment of a mutual co-operation between the private physician and the acting agencies.

DISCUSSION

DR. A. B. WICKHAM, Detroit: I am sure, gentlemen, that Dr. Wehenkel is to be congratulated for the thorough and painstaking work that he has undertaken in regard to the Detroit tuberculosis problem for the last number of years. He has given all his time to this subject and a great deal of personal sacrifice. I think that our problem is pretty well handled in our city.

There are just a few things I want to mention in regard to the work in general. You know that Patterson, during the last year, made some very startling announcements, showing the total number of tuberculosis cases they have in this country—the active cases about one million, and another million of potential cases.

Bringing these figures down more closely to home, on the basis of one to ten, we figure that in Detroit we have approximately ten thousand cases of tuberculosis, active and potential cases.

We also learn that we only have seven hundred beds in which to house these cases. So you can see how far we are from really solving our problem as a whole. It simply means that, after all, we have a case where we must do this job at home. It is a case of home treatment. So we have, in the last couple of years, been feeling more and more, as the cases go home from the sanitarium, that we lose them and they drift back into their old environment and shortly are lost track of, and we soon find they have not been helped.

So this home treatment has been organized and it has been carried on, we think, with a good deal

of success in the city of Detroit. The patient is kept at the sanitarium as long as they can be induced to stay there comfortably. Many times it is a case of necessity that they be returned home. And then, with a competent nursing staff and medical supervision, they are sent home. We have found that it has been of marvelous help to keep in close contact by means of weekly visits by the nurse. Once a month the physician calls on them. We have found that it keeps the patients out of the hands of the charlatans and Christian Scientists. It keeps them from drifting into the hands of the quacks.

There is one other point I want to make. We have heard a great deal this afternoon about focal infection. Non-tuberculous lung infection was brought out by Dr. Dunham. As practitioners, we have been overlooking this for the past few years. We have had an adequate program for the young child. The health crusade program has been a marvelous help in the schools. But there is another class that has been sadly neglected. I want to make a plea for this class this afternoon.

You will find that the average high school boy and girl have not had a fair chance. I think you will be astounded if you follow your case up more carefully and study the average boy coming into manhood and the young girl, with the strain of high school work, that the stress of the high school work is tremendous. I have been astounded this summer with the vast number of children graduated last year or last June and going into office positions, and many of them breaking down with far advanced tuberculosis. It is an appalling fact.

I think we, as medical men, owe it to the coming generation to examine them. Every man owes it to these people and the parents of these children to see that they have a proper chance, that they are examined and watched and observed carefully for months. If they are showing any signs of a breakdown, I think we owe it to the coming generation to give these young people a chance.

DR. C. C. SLEMONS, Grand Rapids: I just want to call your attention to two or three factors in the campaign against tuberculosis. I want to call your attention to the result of the bookkeeping which we find in the Health Department.

You know, gentlemen, we compile your figures over there; and sometimes they are to your credit and sometimes to your discredit. The figures at the present time coming into our office show that 95 per cent of the tuberculosis reports come from the clinics. We know that 95 per cent of the people with tuberculosis are not going to the clinics; that other people have tuberculosis. And it is astonishing, when you come to look these figures over, to find that over 90 per cent of the reports coming into the office come from the clinics.

Two years ago we went over our books. Out of fourteen hundred cases of tuberculosis we found less than three hundred cases of tuberculosis reported. We went over these entire fourteen hundred cases. It was a long job. We found eleven hundred cases reported in there that did not have tuberculosis. Two-thirds of them had never been told they had tuberculosis. And those figures were absolutely astounding to us. The reasons for it are many.

I believe that these anti-tuberculosis campaigns are all a mistake. For instance, I remember one time in the city hall where the clinic was being conducted a youngster had three different diagnoses made in three different days.

The trouble with the tuberculosis problem has been that they have come to the conclusion that the diagnosis is easy and have overlooked a whole army of cases that anybody should have seen. And this applied especially to a lot of tuberculosis workers. They have got tuberculosis unless they can prove they have got something else. Now it seems to me that a diagnosis of tuberculosis should be the last thing to make. In other words, that the diagnostician must prove that individual has tuberculosis, because to say to an individual, "You have tuberculosis" is a serious thing to that individual.

Now, in any problem, any public health problem like the tuberculosis problem, there are two things to be done. One is prevention and the other is the cure and the care of the patients we have on hand.

Without your assistance, without your proper reporting of these cases, our assistance can be of absolutely no service. Ninety-five per cent of the cases are coming from the clinic. What we would like is to urge you people to be prompt in your report of tuberculosis.

A very good friend of mine in Grand Rapids, who does lots of this work, has reported one case in five years. I know he has had a good many more cases than that. Still the records in the office show he has reported one case in five years.

There are only three cities in America that have a lower death rate than we have. We have 126 beds in a brand new institution. The work has gradually been taken over by the city. And, beginning with the first of January the coming year, the city will have taken over all the anti-tuberculosis activities first started by the anti-tuberculosis society.

I think I am right in saying that Grand Rapids had the first shack in the state for the treatment of tuberculosis. And our profession, certain members of it, have been keen and alert and have done a lot of good in this line.

Our death rate has gradually dropped down so that last year it went to 52. If I remember correctly, it is the third city in America in regard to death rate in tuberculosis.

DR. COLLINS H. JOHNSTON, Grand Rapids: Why don't you make these men report their cases? Why don't you prefer charges or arrest this friend of your who has reported only one case in five years? Why let the doctors of this town ignore you in this fashion?

DR. C. C. SLEMONS, Grand Rapids: A good many of you doctors have gotten letters. You have been in the office. If a death from tuberculosis is reported to us, before a death certificate is even issued we go and see if that case is reported and those doctors are brought in and they are asked why. I can see some of the doctors here that I know have received these same letters.

But the big thing with us, Dr. Johnston, is that a great many death certificates come to us and we call the doctor up and he comes in and admits to us—whether they are telling the truth or lying, I don't know—"I didn't know they had it."

DR. A. M. WEHENKEL (Closing): In regard to what the last speaker said about the death certificates sometimes being signed before the patient is reported, I must say this about the cases of tuberculosis being reported in Detroit, we haven't much trouble with the physicians. Last year I think our reports from private physicians amounted to something over fifteen hundred. I consider that is very good.

While most of the cases that are reported have positive sputum that is very true, yet the diagnosis is very often delayed until the sputum becomes positive.

In regard to Dr. Dunham's statement, relative to sinus infections, we all appreciate everything that he says. There is one caution I wish to insert, and that is in regard to another disease which very often reactivates tuberculosis. That is, it will lower

the resistance until tuberculosis manifests itself. We have proven that during the war, when we had records of four thousand soldiers who never did return to duty after they developed influenza, followed by tuberculosis. These patients did not pick up the tubercle bacilli in the army camps. They carried the infection probably since childhood. What happened after they developed influenza, it reactivated tuberculosis. This often occurs with other diseases. It may be sinus infection or typhoid fever, in fact any disease which takes on a chronic form may reactivate tuberculosis.

It has been shown in the Vienna clinic and in the United States, that 95 per cent of the children have a marked tuberculin reaction up to the ages of fifteen. It undoubtedly proves that the infection takes its origin during childhood life and becomes reactivated during adult life.

Some of the bronchiectases are very often secondary symptoms. After repeated examinations, we often find they develop a positive sputum after two or three years of suffering from asthma or any other respiratory trouble. We should not be too hasty in stating that it is not tuberculosis.

AURICULAR FIBRILLATION*

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The history of auricular fibrillation is an interesting and instructive one. In 1902 Mackenzie[1] showed that all evidences of auricular activity are absent from the jugular pulse of patients with a certain type of disordered heart action. This complex irregularity of the heart's rhythm which is so common in the later stages of mitral stenosis had been studied by many since the time of Marey[2] and had been referred to as "the mitral pulse," *"delirium cordis,"* or *"pulsus irregularis,"* but it had never been recognized definitely as an arrhythmia *sui generis.* It had also been known since the time of Skoda[2] that certain patients with heart failure of the congestive type displayed pronounced systolic pulsation of the neck veins and this had been erroneously attributed to tricuspid regurgitation. Mackenzie's demonstration that in many patients these two phenomena were constantly associated, the one coming and going with the other, established what we now know as auricular fibrillation as a clinical entity.

Long before this time physiologists had observed that faradic stimulation of the hearts of animals sets up a tumultous, inco-ordinated activity of the muscle in which the separate fibrils seem at times to be contracting quite independently of each other. It was this apparently independent activity of individual fibrils that gave rise to the name *fibrillation.* When the ventricles fibrillate the circulation ceases at once, but the chief result of fibrillation of the auricles is an accelerated and completely irregular ventricular rhythm. The possibility that auricular fibrillation was the underlying disturbance in some cases of ventricular arrhythmia in man was first suggested by Cushny and Edmunds in 1906, but it was not considered responsible for the irregularity identified by Mackenzie until the introduction of the string galvanometer enabled Lewis[2] and Rothberger and Winterberg to furnish the proof.

In 1895, Englemann[2] suggested that the inco-ordinated muscle activity of fibrillation of the ventricles was due to the interference of many contraction waves spreading from multiple centers of abnormal impulse formation in the ventricular walls. When auricular fibrillation became an object of widespread interest a similar view came to be held regarding it and this view received much support from a consideration of the relations that appeared to exist between auricular fibrillation and other forms of abnormal impulse formation within the auricles. Now that this view, after rapidly losing ground for the past ten years, has been completely overthrown, we see how blind we once were to its inadequacy. The repeated observation that fibrillation begins and ends suddenly, for instance, should long ago have led us seriously to question its validity, for a large number of independent centers would scarcely be expected to cease their activity simultaneously.

In 1908 Mayer[2] showed that under certain conditions a single contraction wave might be made to circulate about a ring of heart muscle for an indefinite period; it is this phenomenon which has come to be known as circus contraction. The following analogy, though crude, may enable the reader more easily to understand its nature. Let us suppose that we have a toy railroad track circular in form and ten feet in circumference and that on this track we place a toy train nine feet long and set it in motion at a uniform speed. Nine-tenths of the track will be occupied by the train and one-tenth will be free; the engine will follow the last coach around and around at a distance of one foot, but will never be able to catch up with it so long as we do not shorten the track or lengthen the train. Let the train represent the portion of a ring of muscle in systole and the open track the portion in diastole; the muscle in systole is in the refractory state, the muscle in diastole is not; we have then a gap of non-refractory in a ring of refractory muscle. On one side of this gap systole is just beginning; on the other side it is just ending. If the gap is closed by lengthening the duration of systole or by shortening the ring the circus contraction comes to an end for the simple reason that the advancing contraction wave can not spread into muscle which is still in the refractory state. It was Mines[3] and Garrey[2] who first suggested that fibrillation was due to the setting up of

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*Read before Section on Medicine, M. S. M. S., Grand Rapids, Sept., 1923.

such a circus contraction in the heart muscle and Lewis[2] and his associates have been able to prove that this is indeed the case. Apparently the path of the circus contraction in auricular fibrillation usually encircles the orifice of one of the great veins which enter the right auricle and the contraction wave makes as many as 450 to 600 complete circuits per minute. The path taken by the circus contraction is of course not circular in the geometrical sense; it is such a circle as a child afflicted with a pronounced tremor might draw, and it varies in form with every cycle so that no two successive circuits are completed in the same length of time. The circuitous and varying path taken by the circus wave is determined by the failure of many fibers to pass out of the refractory state during the brief interval which separates successive cycles, and the consequent setting up of barriers of refractory tissue around which the advancing wave front must find its way. It is this irregularity in the duration of the circus cycle and the presence of regions of partially or completely refractory tissue which interfere with the spread of centrifugal waves from the central wave to the auriculo-ventricular junction that gives rise to the irregularity of the ventricular rhythm. The analysis of auricular fibrillation was fortunately greatly simplified by the occurrence of a similar but less complicated disturbance; in so-called auricular flutter in which the auricles beat coordinately at a rate of 200 to 350 per minute the path of the circus wave is longer; possibly it encircles both cavae instead of but one; as a result of the greater interval between successive cycles the barriers of refractory tissue met by the central wave are smaller and less numerous so that the path of the circus contraction and consequently the duration of successive cycles is invariable. For this reason the rhythm of the ventricles is usually regular, although these chambers, protected as they are by the comparatively feeble ability of the junctional tissues to transmit impulses, respond only to every second, third, or fourth circus contraction. In fibrillation, where the number of circus contractions per minute is much greater and the duration of the circus cycle is variable, the ventricles are stimulated so irregularly that it is impossible to demonstrate any relation between the circus rate and the ventricular rate.

Although we now have so complete a knowledge of the underlying mechanism of auricular fibrillation, we are still almost entirely ignorant of the factors in disease which predispose to it or give rise to its initiation. All observers agree that it is particularly common in three types of heart disease; in mitral stenosis, in the type of heart disturbance produced by toxic goitre, and in what may be called, for want of a better name, chronic myocarditis; I refer to the type of heart disease which occurs after middle age, usually, though not always in association with arteriosclerosis, chronic hypertension, or both. Of 51 patients with auricular fibrillation examined at the University Hospital during the last fourteen months, seventeen had mitral stenosis, seven toxic goitre, and twenty-three chronic myocarditis. There was one case of luetic aortic insufficiency in which auricular fibrillation came on after treatment with salvarsan and digitalis, and the remainder (three cases), could not be classified. It is generally agreed that syphilis is not a common cause of the disorder. A positive Wassermann reaction is, as shown by Levine[3], no more common among fibrillators than among the general run of hospital patients and it is very uncommon to find fibrillation association with luetic aortic insufficiency; the case mentioned above is the second that I recall having personally examined. Libman and Rothschild[4] have pointed out that fibrillation is also very uncommon in patients with sub-acute bacterial endocarditis.

Between the age of patients with auricular fibrillation and the type of heart disease with which it is associated there is an interesting relation. Of the seventeen patients with mitral stenosis and auricular fibrillation mentioned above, only three were over fifty years of age; of the twenty-three patients in whom fibrillation was associated with chronic myocarditis, on the other hand, only four were under fifty years of age and the youngest was forty-six. The age of fifty may, therefore, be taken as the approximate dividing line between the two groups[3]. In the separation of these groups the electrocardiogram is often useful; ten of the fifty-one cases under discussion showed right ventricular preponderance and all of these patients had mitral stenosis; sixteen showed left ventricular preponderance and eleven of these fell in the chronic myocarditis group, four had toxic goitre, and one had mitral stenosis. This last patient was a man past middle age who was seen on but one occasion and it is possible that he had hypertension or arteriosclerosis in addition to mitral stenosis. The association of right ventricular preponderance with auricular fibrillation should lead, therefore, to careful and repeated search for the murmur of mitral stenosis which is often indistinct when the ventricular rate is rapid and the rhythm irregular. Left ventricular preponderance is very much against the diagnosis of mitral stenosis and suggests the presence of arteriosclerosis or chronic hypertension.

This series of fifty-one cases of fibrillation includes only such patients as were seen in the medical wards or in the medical out-patient department. Many additional cases were examined in the surgical wards where transient auri-

cular fibrillation frequently follows goitre operations. Under these circumstances the ventricular rate is often excessively rapid, sometimes reaching 200 per minute. A considerable proportion of these patients die, apparently not so much because of the auricular fibrillation and resulting circulatory disturbances as because of the high grade of toxemia which many of them show. Transient post-operative fibrillation is not confined to cases of toxic goitre, however; it occurs after all sorts of operations, usually in patients past middle age. Although alarming, to the surgeons it is, except in patients with exophthalmic goitre, rarely followed by serious consequences.

Transient auricular fibrillation is fairly common during some of the acute infectious diseases. Cohn[5] has shown that it occurs in a small percentage of patients with lobar pneumonia and it has also been observed during acute rheumatic fever and other acute febrile diseases. Robinson[6] has reported a case of transient auricular fibrillation in a young man following hydrogen sulphide poisoning; the fibrillation persisted for a few days only and no other evidence of cardiac disease was found.

From time to time patients are seen in whom paroxysms of auricular fibrillation occur at irregular intervals; the attacks are usually accompanied by severe palpitation and precordial distress and sometimes by severe precordial pain or symptoms of heart failure of the congestive type. Paroxysmal auricular fibrillation is clinically indistinguishable from simple paroxysmal tachycardia except by the arrhythmia; it may recur over a period of many years without serious results, but there is a distinct tendency for the disorder to become persistent. Patients with persistent auricular fibrillation often state that at the beginning of their illness the arrhythmia came in attacks. Sometimes such an attack of fibrillation follows severe exertion and if the nature of the ventricular tachycardia is not recognized and symptoms of heart failure ensue, a diagnosis of acute dilation of the heart may be made. Last year I saw a college student who had an attack of auricular flutter after taking part in the undergraduate rush; after the flutter ceased he was found to have early mitral stenosis of which he had previously had no knowledge. The heart was not enlarged and the murmur of stenosis was not audible during the attack; it is easy to understand how such a disturbance might in the old days have been considered acute heart failure brought on in a healthy subject by severe exertion.

A small percentage of patients with auricular fibrillation show no other evidence of cardiac abnormality and occasionally no disease of the heart is found post mortem, although auricular fibrillation was present during life. Some believe, therefore, that auricular fibrillation may exist as a functional disorder in the absence of cardiac disease. It is my own opinion that persistent auricular fibrillation is invariably, or almost invariably, associated with chronic changes in the heart muscle. This view is supported by the great tendency of persistent fibrillation to recur after it has been abolished by quinidin sulphate. These changes in the heart muscle are not, however, necessarily gross structural changes which the pathologist can discover; they may be physico-chemical changes that are beyond the reach of our present methods of postmortem examination. Furthermore, I believe that the myocardial changes present in persistent auricular fibrillation are, with few exceptions, serious. That patients with this disorder may occasionally live comfortably and engage in many of the ordinary activities of life for many years is not to be denied, but the same thing is true of patients with many other serious illnesses. Transient auricular fibrillation may occur in patients with chronic myocardial changes of lesser grade in response to overexertion, to toxemia or infection, or even to emotional strain; or it may occur as a result of temporary myocardial changes during the course of some acute toxemia or infectious disease. The nature of the myocardial changes which give rise to auricular fibrillation in acute diseases, their seriousness, and their permanency must be judged from our knowledge of the cardiac pathology of the disease in question. Transient auricular fibrillation during an attack of rheumatic fever has not the same significance as the same disorder during the course of a pneumonia.

Auricular fibrillation is usually easily recognized by auscultation of the heart and palpation of the pulse. It is the only irregularity which is common when the heart rate exceeds 120 per minute, for sinus arrhythmia, partial heart-block, and extrasystoles usually disappear before the rate reaches this level. The combination of arrhythmia and tachycardia is, therefore, an almost certain sign of auricular fibrillation. If the heart rate is below 120 and can be forced up to that figure by exercise or by other means, the persistence of the irregularity strongly suggests fibrillation. The heart rate must be determined by palpation of the apex beat, or by auscultation, for many of the weak heart beats do not produce a pulse at the wrist. There is, therefore, a considerable discrepancy between the heart rate and the pulse rate, especially when the ventricular rate is high. A knowledge of the magnitude of this so-called "pulse deficit" is a valuable guide in judging the grade of the circulatory disturbance produced by the arrhythmia. The presence of a pulse deficit is not, however, pathognomonic of the presence of auricular fibrillation; it is oc-

casionally produced by multiple extrasystoles. In most cases of auricular fibrillation the arrhythmia is so pronounced and characteristic that there is no difficulty in the diagnosis; it is an absolute arrhythmia in which there is no repetition of the same series of events from time to time, such as there is likely to be in the case of the other cardiac irregularities, The most difficult cases are those in which, either as a result of treatment with digitalis or because of the relatively low conducting power of the junctional tissues, the ventricular rate is within normal limits, Such cases are recognized readily only after considerable experience for the arrhythmia may be very slight. Fortunately, however, the recognition of auricular fibrillation when the ventricular rate is low is of much less practical importance than when it is high,

It is only since the recognition of auricular fibrillation as a clinical entity that many misconceptions regarding the effects of digitalis have been cleared up, It is now known that digitalis does not slow the heart rate appreciably when the rhythm is regular unless it be given to the point of producing heart-block. In auricular fibrillation, on the other hand, digitalis reduces the rate of the ventrilces remarkably and at the same time makes the rhythm more regular. So obvious and striking are these effects that there has been a tendency to consider them the only beneficial effects of the drug, and it has been stated that in heart failure with regular rhythm digitalis is useless. This is undoubtedly an extreme view and many protests have been raised against it. There is good reason to believe, even though it may be impossible to prove, that digitalis increases the amplitude of ventricular systole in man as it does in animals. We know that it produces characteristic changes in the form of the human electrocardiogram and while the significance of these changes is doubtful, it has been shown by Cohn and Levy[7] that the amount of digitalis required to produce them in animals also increases the amplitude of ventricular systole. Nevertheless, digitalis is, on the whole, a more effective remedy in heart failure associated with auricular fibrillation than in heart failure accompanied by normal rhythm. For this there are probably several reasons. Digitalis has, in the first place, the same effect upon the ventricular muscle in auricular fibrillation that it has when the rhythm is regular, but to this effect is added the benefits of a reduction of the ventricular tachycardia and arrhythmia. In the second place, it is probable that patients with auricular fibrillation, because of the extra strain thrown upon the heart by the disordered mechanism, break down earlier than patients with normal rhythm; that is, at a time when the heart muscle has more recuperative power. And lastly, fibrillation is common in patients with those types of heart disease in which a tendency to recovery is greatest; in leutic heart disease in which the chances of recovery from heart failure are poorest auricular fibrillation is uncommon.

In very rare instances the auricles cease to fibrillate after and apparently as a result of digitalis medication. The opinion that this is a frequent occurrence is due to the fact that the arrhythmia may become inconspicuous when the ventricular rate is greatly reduced by the drug. The rhythm does not, however, become absolutely regular unless the treatment is pushed to the point of producing complete heart block. In this connection it should be remembered that in complete heart-block produced by digitalis, bradycardia is not always present.[3]

In giving digitalis to patients with auricular fibrillation we usually give the drug in doses sufficient to reduce the ventricular rate to between 60 and 70 per minute while the patient is at rest; less than this amount is insufficient. This can usually be done without producing nausea or other signs of digitalis intoxication. From time to time, however, patients are encountered in whom it is impossible. In some instances the patient is particularly sensitive to the drug and toxic symptoms arise after doses which are smaller than those tolerated by the average patient and smaller than the doses usually required to produce the desired results. In other instances, however, the fault lies elsewhere and full doses of the drug do not have the expected effect upon the ventricular rate. It is often said that such failures are particularly common in auricular fibrillation associated with toxic goitre; in my own experience many of these patients react in exactly the same way as other fibrillators, but in many of those with auricular fibrillation and excessive tachycardia following goitre operations I have found it impossible to reduce the ventricular rate appreciably. In one or two instances I have given as much as fifteen ampules of digifolin intramuscularly, an amount of the drug which usually produces a conspicuous effect, without reducing the ventricular rate more than ten or fifteen beats per minute. Such patients often die and at autopsy marked degenerative changes in the liver and other signs of profound toxemia are found. I do not believe that the failure to reduce the heart rate has in such cases any real effect upon the outcome, but regard death as the result of thyroid shock. It is a curious fact that auricular fibrillation does not always come on during the operation or soon after, but may occur as late as the third or fourth day.

The manner in which digitalis is administered is not of great importance; it is best to use a preparation which is fresh and which has

been standardized biologically so that valuable time may not be lost. It is also convenient to know the cat unit strength so that the amount of the drug that will be required to digitalize the patient may be computed approximately. As shown by Eggleston about 0.15 cat units per pound body weight are usually necessary. Using the calculated total dose as a guide the drug may be given according to any desired scheme, the time taken to administer the full dose being determined by the urgency of the need. The calculated dose is only a rough guide for the susceptibility of different patients and the completeness with which the drug is absorbed are variable; it is necessary, therefore, to continue the treatment until the desired effects are obtained or until toxic symptoms arise. The vomiting which results when the drug is pushed to the limit of tolerance has repeatedly been shown to result from a direct effect upon the vomiting center or more probably from a reflex originating in the poisoned heart; it has nothing to do with the action of the drug upon the stomach. No drug which will not produce such vomiting is a good preparation. Nevertheless, vomiting of another kind may result from the administration of the drug; vomiting which comes on soon after the medicine is swallowed. This type of vomiting is more likely to occur in patients who are very ill or who are subject to nausea. It is always annoying, since it is difficult if a large dose has been given to tell how much of the drug the patient has retained, and it may seriously interfere with the treatment. Whether such vomiting is more common with one preparation than another I am not able to say, but I have adopted the plan of giving the drug intramuscularly or intravenously to patients who seem likely to vomit if it is given by mouth. For this purpose strophanthin is a suitable preparation if given intravenously in divided doses. Recently I have used digifolin instead; it has the disadvantage of being expensive, its cat unit strength is not given by the manufacturers, and it is certainly a weaker preparation than the average good tincture. Nevertheless, I have used it with excellent results. Dr. Norman Clark, one of my former associates, tested it out carefully in a number of patients and found that from fifteen to twenty ampules were required to digitalize the average patient; a few patients required more. Five ampules were given each night and morning until the effects desired were obtained. I should not hesitate to give a single dose of ten ampules (each ampule contains 1.1 cc. and is said to be equivalent to 0.1 gm. of dried digitalis leaf) in an emergency to a patient who had had no digitalis during the previous ten days, and this dose may be followed, after three or four hours, by a second dose of five ampules if necessary.

Within the last two or three years another drug has been widely used in the treatment of auricular fibrillation. It was shown by Wenckebach that quinine sometimes stopped attacks of auricular fibrillation promptly and subsequently, Frey found that quinidin, an isomer of quinine, was much more potent and could be used to abolish even long continued fibrillation. Most observers find that fibrillation can be abolished temporarily in about one-half of the cases; but in many patients a relapse occurs almost at once so that no permanent benefit results. Furthermore, quinidin has some undesirable effects; it has a tendency greatly to increase the ventricular rate and this always makes the patient uncomfortable, and if he has heart failure, the increased strain thrown on the heart tends to increase it. For this reason the drug should seldom be given to patients with heart failure of high grade; if such patients are to receive quinidin they should first be treated with rest and digitalis until they are in fairly good condition. According to Lewis, the simultaneous administration of digitalis tends to keep the ventricular rate down without interfering with the other effects of quinidin. In some instances the administration of quinidin has been followed by embolism or sudden and inexplicable death, and although these accidents are uncommon they have deterred many from the use of the drug. It is generally admitted that it should not be given in large doses to patients that can not be most carefully observed during the course of treatment. Personally, I have not used quinidin very extensively. Nineteen of the 51 patients mentioned in the earlier part of this article received the drug, but in only four did normal rhythm result. The small percentage of successes was probably due to the fact that the drug was usually given for one day only and its use was abandoned whenever disagreeable symptoms arose. The preparation that I have been using almost invariably produces nausea and vomiting and this has proved a great handicap in its use. I have given single twelve grain doses of quinidin to a number of patients with heart disease who had no arrhythmia to determine its effects; nearly all of these patients were nauseated, some had diarrhoea, and many complained of headache or dizziness. One developed a very extensive skin eruption and a high fever. The drug often produced a mild tachycardia, but in the majority of cases there was no other change either in the cardiac symptomatology or in the form of the electrocardiogram; in a few instances the patients stated that they felt better and a few minor changes in the electrocardiogram were noted. Quinidin sometimes abolishes an extrasystolic arrhythmia and the tachycardia which it often produces may be in part responsible for this effect. Many patients with extrasystoles receive no benefit from the drug.

I have had a few cases in which quinidin has

given extraordinarily good results. In one instance of fibrillation of recent origin in a woman with mitral stenosis the fibrillation stopped under quinidin about sixteen months ago; since that time the patient has taken the drug continuously in doses of three grains twice a day and is still free of fibrillation and in excellent health. In another instance of fibrillation and toxic goitre, the fibrillation stopped after small doses of the drug. Quinidin medication was discontinued and the fibrillation returned three weeks later. Quinidin was given a second time with the same result as before and the patient has taken the drug continuously for the last six months. Several attacks of fibrillation have occurred, but they have all been short and have usually come on after unusual effort or excitement. In a third case an attack of auricular flutter, which came on after severe exertion, was promptly stopped by the drug. No more quinidin has been given, but the flutter has not returned. I have frequently been able to stop attacks of fibrillation which followed operation with as little as five grains of the drug.

My own experience with quinidin leads me to believe that its sphere of usefulness is decidedly limited, but that it is a very valuable remedy in selected cases. It is a somewhat dangerous drug and I do not advocate its use when its action can not be electrocardiographically controlled. It frequently produces complicated disturbances of the heart's mechanism which can only be analyzed with the aid of the electrocardiograph and some of these make the discontinuance of the drug imperative. Even when the utmost care is used, however, serious accidents such as temporary paralysis of the respiration or even sudden death may sometimes result. In all cases preliminary doses must be given to determine whether the patient has any idiosyncrasy to the drug; if none is present it is customary to give five or six grains every two to four hours for three or four days or until the fibrillation is abolished. After the arrhythmia has given place to normal rhythm the drug should be continued to prevent relapse; three grains twice a day may be given for this purpose. The best results are obtained when the fibrillation has recently developed, when the heart is only slightly enlarged, and when cardiac weakness, if present, is not of high grade. The drug should not be given to patients who give a history of embolism.

The manner in which quinidin acts in auricular fibrillation is well understood. The drug partially paralyzes the vagus nerves; it reduces the rate of conduction and prolongs the refractory period of the muscle. I have previously explained that fibrillation of the auricles is due to the setting up of a circus contraction; its continuance depends upon the maintenance of a certain relation between the length of the path pursued by the circular contraction wave, the speed of conduction, and the length of the refractory period. Quinidin disturbs this relation; its effect on the vagus and its direct action on the muscle both lengthen the refractory period and if this effect preponderates over its effect upon the conduction rate the whole of the muscle which lies in the path of the circus contraction is at length simultaneously in the refractory state and the circus contraction must seek a new and longer path or cease its travels. As the refractory period is lengthened more and more the path which the circus contraction must take becomes longer and longer; either because a longer path is no longer available or because unusually large barriers of refractory muscle are finally encountered, the circus contraction comes to an end. In those cases in which quinidin fails to stop the fibrillation it may be assumed that the effect on the speed of conduction preponderates over the effect upon the refractory period, or that it is impossible to increase the refractory period in a sufficient degree.

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DISCUSSION

DR. M. A. MORTENSON, Battle Creek: What Dr. Wilson has said about auricular fibrillation I think is very apropos and I want to emphasize the importance of the recognition of this type of heart disease because you will find it is much more common than we think if we study our cases carefully.

Earlier in the study of heart disease, before auricular fibrillation was definitely classified, a few cases were recognized under the term of delirium cordis, and some of the older physicians recognize it better that way than by the present more elaborate description of the disease.

Relative to the question of auricular fibrillation in sub-acute bacterial endocarditis, I have seen one case in my experience of this type; and this individual had this disease for the period of about two years. From all I could learn, the trouble began first in the mitral valves and then extended to the aorta.

As to the seriousness or auricular fibrillation, I agree that it is a serious disease when we say that any chronic heart disease is serious. But I believe that there are just as many cases of heart disease of the chronic valvular type that are serious that do not show auricular fibrillation. I have had opportunity to observe a good many cases of auricular fibrillation over a number of years and the patients had very little inconvenience from it, provided

they are careful, just as anyone with a chronic heart disease should be.

We find many valve diseases that are extensive and embarrass the heart without auricular fibrillation, and such cases must be managed very much the same as those that have fibrillation. I think that it is more a study of the heart as a whole and what its capacity is to do the work demanded of it that gives us a clue as to just what we may permit the patients to indulge in.

I am sorry that Dr. Wilson did not say a few words relative to the quinidin treatment because I think that is a very important feature in the management of these cases of heart disease, particularly auricular fibrillation, of course, but it goes still further and can be used in the cases of extrasystoles and the tachycardias. But I believe that a great deal of observation is still necessary in order to put us on safe ground and a solid footing as to the use of quinidin.

Wickenboch spent some days with me a few weeks ago. Relative to the use of quinine in the management of heart disease, it was very interesting to learn that his attention was first called to this many years ago when still a practitioner in Holland. He had a patient with malaria and also an irregular heart action. He asked the doctor why he should have these irregular beats. The doctor said, "They are of little consequence." He said, "I can stop them." He said, "When I take quinine for malaria then my irregular heart action stops." The doctor asked him to do this and he came the next day, and sure enough, the premature beats had subsided. And the doctor has used quinine in the management of certain types of irregularities because of those observations ever since.

I think when we come to the use of quinidin sulphate, we must be careful to have our patients under strict observation. Preferably they should be in the hospital. As we go further in the management of heart disease with quinidin, we will begin to put these patients to bed while treating them with quinidin, at least in the beginning of the course of treatment. In this way I believe the general practitioner, as well as the heart specialist, will learn definitely how to manage these cases and to which cases to apply quinidin treatment as well as how to avoid catastrophes as reported by various observers.

DR. WALTER J. WILSON, Detroit: The question of fibrillation is very interesting because of this peculiar fact, that is, you can get a greater proportion of apparent recoveries or you can get amelioration of this particular phase of cardiac trouble more than any other phase of cardiac conditions. Striking results are obtained.

I remember a case I saw a number of years. She is still living. It was one of these types of which Dr. Frank Wilson speaks. There was edema of the lower extremities. There was a certain amount of abdominal ascites.

Some doctor said she had water on the liver. That was his diagnosis. This happened to be auricular fibrillation. On digitalis treatment, it cleared up. She still uses digitalis, something I don't recommend. She is a striking evidence of what can be done. The majority will do finely on digitalis treatment. As far as digitalis treatment is concerned, don't believe in beginning with massive doses. You never can tell what exactly that bundle is going to do. So you have to be very careful.

The age incidence is generally high. The youngest case I have seen was ten or eleven years of age. Most of them develop in adult life, although I have had a number fifteen or sixteen years of age.

The question of instrumental examination is as Dr. Frank Wilson puts it. You can diagnosticate 80 or 90 per cent of the cases without the use of such instruments. If you want to know about your systoles, you cannot differentiate unless you have a myocardiogram. I have in my pocket a cardiogram of a woman I saw in 1914. She had at that time a cardiac rate of 48. She still has that rate. One of our leading Detroit physicians is in the same condition. I saw him when he developed his fibrillation. He has been fibrillating ever since. With his flutter, he developed block. The block has been sufficient to keep his rate at a point where he has been able to get along without digitalis.

I am not very much in favor of quinidin. I had a patient under observation for several years. I saw her develop premature beats and eventually fibrillation. She was getting along very nicely on digitalis medication. I used quinidin. Five grains one day and ten the next. The same night she died. With my present experience, I would not have given her that.

She had a mitral stenosis. No doubt there was a thrombus behind that orifice and the regular rythm ensued and the valves contracted on the soft walls and she had a general embolus and died.

Where you can demonstrate any special weak lesion, go ahead and use quinidin. I have a case now. We decided she had a myocardial disturbance. I used quinine. She was under treatment for a long time with a doctor now deceased for her goitre condition. Under this form of treatment, she has cleared up and feels better than for years. Quinine is not so detrimental and so depressant to the heart muscles as quinidin. I would recommend it rather than quinidin itself.

I appreciate ever so much the paper of Dr. Frank Wilson. I think we all agree with everything he said. We are very glad to hear him in the medical section of the Michigan State Medical Society.

THE CHAIRMAN: I would like to ask Dr. Wilson, in closing, if he will discuss the use of quinidin in fibrillation.

DR. FRANK N. WILSON, Ann Arbor, (Closing): I have not used it very extensively. I had one patient who had a cerebral embolism after the fibrillation had been abolished by quinidin. Whether this was due to the drug I am not quite sure.

I also had several patients whom it made very sick. Quinidin, in one sense, does the opposite from what digitalis does. It greatly increases the ventricular rate. If the patient has heart failure, the quinidin is likely to make it worse. For this reason the drug should not be given to people who have heart failure of an advanced grade. If such patients are to be given quinidin at all they must be given a preliminary course of treatment and rest in bed until they are in the best possible shape for the quinidin to be given.

Several cases of sudden death have been reported following quinidin. Just what they are due to we do not know, but Kerr in San Francisco had one case where he knew the ventricles went into fibrillation on two occasions following this drug. The patient recovered both times.

It seems probable that some of these cases of sudden death are due to ventricular fibrillation. Nineteen of the 51 cases I mentioned received quinidin. In only four of these was theauricular fibrillation abolished. That is a very poor percentage of successes. Whenever any unfavorable symptoms arose, I stopped the drug and rarely gave it more than one day. If the patient was nauseated and had a cardiogram which looked serious, I discontinued the drug.

One patient developed fibrillation three or four months before I saw her. The fibrillation was

abolished by quinidine. The patient has taken quinidin each night and each morning ever since and has had no more trouble.

I had a second patient who did almost as well. This was a case of flutter which came on after exercise. I have stopped fibrillation following operation by as little as five grains of the drug.

I have not had very much success in stopping extrasystoles. In most of the cases in which the drug was given for this purpose the extrasystoles continued as before.

I have given quinidin to a number of patients, probably 25 or 30, who had no disturbance of rhythm at all, just to see what effect it would have. Most of them were nauseated, but the drug produced no change in the cardiac symptomatology, none of the things likely to be produced in fibrillation. It does cause tachycardia. It may be that is why it sometimes abolishes extrasystoles.

CHANGES IN THE LUNGS AND BRONCHI DUE TO UPPER RESPIRATORY DISORDERS*

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An examination of the chest even though it includes history, physical findings, and X-ray evidence, is incomplete without a definite knowledge of conditions in nose, throat and mouth; and only in very frank cases of lower respiratory disease should an opinion be given without an examiner having a report from a competent nose and throat specialist on the condition of the upper respiratory tract.

It is a well-known fact that the upper respiratory tract is the seat of focal infections and the constitutional effects and clinical manifestations of such affections are recognized by the internist. The changes in the lower respiratory territory because of nose and throat abnormalities are not so generally understood.

A partial obstruction to the inspirated air caused by a deflected septum, enlarged tonsils, adenoids or polpi, may lead to abnormal physical findings in the thorax due to a localized atelectasis in one or both apices; and in such instances a physical examination of the chest may reveal deficient expansion, feeble vocal fremitus, weakened breath sounds, often grouped, persistent rales, and sometimes definite apical retraction. A deflected septum or enlarged turbinates, may act as a dam behind which collects mucus and excretion, which acts as a splendid culture media for the developing and harboring of bacteria. The same narrowing of the tract causes a greater tendency on the part of the patient to force it clear, thereby extending the infection into the accessory sinuses, with the resulting respiratory and constitutional symptoms.

Any affection of the nose or throat may produce interesting evidence on the stereoroentgenograph of the chest. The bronchial tree supplying one or both pulmonary apices may be thickened, infiltrated, interlaced, beaded, and is often hazy in appearance, simulating to a marked degree an early tuberculous process. The lung roots may seem enlarged and boggy and yet all such signs may disappear in a year's time after a surgical correction of the upper respiratory tract. In a review of these changes in the lungs and bronchi due to a blocking of the nasal passages, think of the similarity in signs and symptoms when compared with a case of early pulmonary tuberculosis, such as the similar physical signs in the chest, the X-ray abnormalities in lung roots and bronchial tree as above described, the respiratory symptoms of chronic cough and expectoration, and constitutional evidence such as irregular afternoon fever, fatigue, pallor, loss of weight, and irregular night sweats. Such patients often present a striking picture. They are stamped with a "definite appearance of something wrong" and are labeled with many indefinite attempts at diagnosis.

It is not surprising that many such cases are diagnosed as pulmonary tuberculosis and treated as such. Is it then not reasonable to consider a careful examination of the upper tract a necessity before a final diagnosis is given in all cases of pulmonary or bronchial disturbances where evidence of frank lesions is lacking?

On the other hand, it is just as important for the laryngologist to obtain a definite knowledge of the lungs, bronchi, mediastinum and circulatory system. A mitral lesion can be the primary cause of a persistent cough, and the administration of some digitalis may be of diagnostic value in such a case. An enlarged arch has produced respiratory symptoms and an irritated pleura, pulmonary tuberculosis, neoplasms, and substernal goitre have all been a remote source of such symptoms while some upper respiratory abnormality has been wrongfully blamed.

It is a proven fact that thoracic affections, such as the different forms of chronic bronchitis and certain types of bronchiectasis, and lung affections including chronic pulmonary tuberculosis, have failed to show definite improvement regardless of the most intensive therapeutic measures until the abnormalities in the upper air passages were corrected by surgical interference. A wise physician once said regarding the treatment of chronic affections of the lungs and bronchi, "First inspect the nose and throat." Webb considers affection of the nasal sinuses as the chief cause of bronchiectasis and recommends the correction of such a condition as the first step in the treat-

*Read before the Section of Laryngology at the Annual Meeting of the State Medical Society, Sept. 12-14, 1923.

ment of the thoracic disorder. It is not advisable to perform major operations on the nose and the throat in the presence of active pulmonary tuberculosis, but some cases of the chronic type free of toxic symptoms have a better chance of a speedier recovery, and a more permanent arrest, after being relieved of the extra burden of a pair of diseased tonsils or a chronically infected nasal sinus.

Affections of the upper respiratory tract give rise to both local and conditional symptoms, the former including cough and expectoration, due to enlarged glands or the inhalation into the trachea of infected mucoid material. Diseased tonsils alone are perhaps more liable to cause constitutional symptoms. A dry cough may be the only symptoms referable to the respiratory tract. On the other hand, the different types of bronchitis, are more likely to be the result of a chronic sinusitis; and such affections are often considered as primarily thoracic when the initial lesion really exists in the nasal passages.

A certain type of localized bronchitis or alveolitis has been noted by the writer, in which the physical signs consist of grouped, persistant, localized, medium-sized rales, increased on coughing and limited to a small area at one pulmonary base laterally or posteriorly, with negative X-ray findings, with an irregular afternoon fever of from 99.2° to 99.8°, and a dry cough was apparently the only clinical accompaniment. In one such case, of three years' duration, the removal of three ulcerated teeth was followed slowly but surely by a complete disappearance of the clinical symptoms and physical signs. A dental abscess discharging into the buccal cavity may be the cause of a long-standing bronchitis.

Internists interested in the study of lung affections often overlook the fact that the heart is a part of the thoracic continuity. Nose and throat specialists should pay close attention to the buccal cavity and the dental condition. After the upper respiratory encumbrances have been corrected and as far as possible the nonexistance of pulmonary affections has been proved, a goodly number of cases of chronic laryngitis still exist on account of neglected dental inspection. A negative X-ray report on the teeth does not prove that dental abscess and infections do not exist but it is a safer procedure than a mere optical inspection and indifferent tapping of the teeth as a method of investigation.

Changes in the thoracic contents due to nose and throat affections may be caused by different conditions. The mechanical blocking of the intake of air due to partial nasal obstruction gives a limited and delayed supply of air to the lungs, and localized apical atelectasis may be the result, with the associated abnormal physical signs. Infection from retained secretions carried down to the bronchial glands by the lymphatics or the blood stream and the inhalation of irritating chemical substances account for such changes as chronic laryngitis, bronchitis, and bronchial adenitis.

Chronically enlarged bronchial glands in children are frequently the result of the action of the tubercle bacilli, but a child should not be labeled tuberculous on this evidence alone. The cause of the bronchial adenitis may be found in the tonsils or the posterior nares.

In a laboratory examination of the sputum the presence or absence of tubercle bacilli is not enough to determine. Isolate the prevailing organism, and examine for the presence of elastic tissue and pus cells. If more routine examinations of sputa were demanded by those of us interested in respiratory affections, some very serious mistakes would be avoided. A careful examination of the sputa in cases of all acute colds would increase the percentage of early diagnosed pulmonary tuberculosis as many latent cases "open up" for a short time during an attack of some acute non-tubercular respiratory infection only to rapidly subside and disappear along with the disappearance of the "recent cold."

In the past eight years Dr. Colver and the writer have been associated in the study of many such cases, and our experiences have led us to consider carefully the following points:

1. Chronic narrowing of the nasal passages often causes definite abnormal physical and X-ray findings in the thorax which gradually disappear after corrective surgical methods have been employed.
2. In all cases of chronic respiratory disturbances examine carefully, by every available means, both the upper and the lower respiratory tracts.
3. It is not advisable to treat minor upper respiratory ailments too persistenly in the face of decided respiratory symptoms such as cough and expectoration. Investigate the thorax.
4. An opinion on the lungs should not be given without a knowledge of the conditions in the upper respiratory tract except in cases of frank lesions.
5. Major operations on the accessory sinuses require a previous knowledge of the conditions in the thorax.
6. The causes of asthma are legion; infections in the upper air passages and accessory sinuses explain the etiological factor in some cases.
7. It is well to remember that the teeth are located close to the upper respiratory tract and often require investigation in the search for the cause of respiratory symptoms.

8. The X-ray may be used to advantage not only on the thorax but also on the accessory sinuses.

9. A routine laboratory examination of sputum is advisable.

10. If the patient is to receive the greatest amount of good in the greatest number of instances, specialists must take a broad view of all cases, and should always consider the possibility or probability of etiological factors which are outside their specific fields of endeavor.

DISCUSSION

DR. HERBERT RICH, (Detroit): I wish to call your attention to the resume of this paper which is printed in the program. It is not often that a thing like that is worth reading, but this is, and if you can find anywhere else in the English language, in print, a record better systematized and boiled down, I would like to know where it is. So far as I know it has not been done before. There are two or three things I would like to add, and I will read it hastily.

"Any upper respiratory disorder, especially a stenosis or something which harbors chronic infection, will, as a rule, cause definite changes in the lungs and bronchi. These alterations may be divided into mechanical, chemical and infectious.

"Mechanical changes take more or less a form of atelectatic signs, especially in the upper lungs. Those conditions in turn cause definite alterations in the breath sounds which may be confused with more grave pulmonary disorders."

Dr. Dunham of Cincinnati told us yesterday in our section of a chronic case, a man who was treated seven years for tuberculosis, and who had chronic bronchitis, but no tuberculosis.

"The chemical and infectious changes are caused by flooding of the lymphatic glands with infection and toxins from diseased tonsils or chronic sinus infections."

I think there should be added to that, "or other focal infections."

"The lower respiratory sequelae of these are chronically enlarged lung root zones and an infiltrated bronchial tree."

In other words, an increased density at the root of the lung. That is a term that practically amounts to what is said here, and is perhaps more easily clinically demonstrated. One of the things we have to do in making out physical signs in the chest is to demonstrate increased density at the root of the lung.

"The X-ray appearance and physical findings are often very confusing and difficult to interpret.

"Chronic lower affections such as tuberculosis, bronchiectasis and certain forms of bronchitis, often have a greater tendency to diminish or recover when the upper respiratory tract is freed of the above mentioned abnormalities."

I think that is a very remarkable condensation of an important subject. I have one or two brief comments. Dr. Pritchard took this up on the basis of non-tuberculous disease. He said that some of these patients had been diagnosed tuberculosis that were not. I want to say that that is the beginning of it, and that a great many of these become tuberculous for the reason that their upper respiratory tract lesions are not taken care of. In our sanitorium, where we have had several thousand cases of positive tuberculosis in the adult, we look for and expect to find a chronic lesion of the upper respiratory tract, uncorrected, and it is very rarely that we do not find it. Now it is my opinion, backed by fifteen years' experience in the subject, that if the upper respiratory tract condition had been corrected, fuly 50 or 60 per cent of the inhabitants of tuberculosis sanitoriums would never have been there. I may be wrong, but it is difficult to prove, and I offer it to you for what it is worth. It certainly is an important item in the cause of tuberculosis.

One other thing which is not particularly mentioned by Dr. Pritchard, is the explanation of the apical form of pulmonary tuberculosis from tonsillar infections. This has been studied very carefully by Dr. Van Zwaluwenburg of Ann Arbor, and it has explained many things about the pathology and clinical course of tuberculosis more satisfactorily than it was ever done before. This has not been generally accepted, but I believe it will be. Like other clinical phenomena, it is difficult to prove, but the frequency with which we see demonstrable with the Xray plates chains of calcified gland connected with the tonsil and tip of the pleura, and the difficulty of explaining the onset of apical tuberculosis in any other way, together with the frequency with which tuberculosis is found in the tonsils—patients having this apical tuberculosis and not bronchical gland tuberculosis—leads us to believe that a strong case can be made out for the tonsillar etiology of cases of purely apical tuberculosis.

INSOLATION ENCEPHALITIS*

EMIL AMBERG, M. D., F. A. C. S.
DETROIT, MICH.

In the Alienist and Neurologist Vol. XXXIX, No. 4, 1918, I reported a case of possible insolation. In this article I mentioned the various symptoms which the patient, then 36 years old had exhibited. The patient, a workingman, had been brought in an unconscious state to Harper Hospital, July 31, 1917. The temperature at 5:45 p. m. (rectal) was 108.6. He had edema of the lung, rales over both lungs, frotty sputum, he was intensely cyanotic and in extreme dyspnea. There exists a discrepancy between the recollection of the patient and that of the superintendent of the factory. The latter claims that a disturbance existed at a previous date, which cannot be fixed with certainty, but seems to be approximately eight weeks previous to the sunstroke when "the patient acted as if dazed, stupid, like dopish, could not walk straight." The patient, however, claims that he felt well until the day of the sunstroke but that he fell on the left side of his head two weeks before the time of the sunstroke. Among the symptoms which the patient represented was nystagmus. He has repeatedly been examined during the course of the last six years. It occured to me during these years, that there must be a direct connection between the attack of sunstroke and the disease exhibited by the patient. Since the time that I was asked to examine the patient until now, I thought that the Barany

*Read before Section on Ophthalmology-Oto-Laryngology, M. S. M. S., Grand Rapids, Sept., 1923.

tests might be able to help to clear up the conception of the disease. I was fortunate to have the opportunity to have the patient examined by Lewis Fisher of Philadelphia and later by Professor Barany of Upsala.

The hospital record, September 24, 1917, when patient was re-admitted, says in part:

Central Nervous System: Up to eight weeks ago no paralysis, tremor, paresthesia, hyperesthesia, atrophy, hallucinations, illusions, ulcerations nor difficulty in locomotion or speech.

September, 1917, Dr. Wendel established the following:

Ears: No evidence of any suppurative condition, past or present. Patient has slight deafness, more marked on left.

Spontaneous horizontal nystagmus (with slow quick component) first degree to both sides. Nystagmus varies, at times becoming slightly wild and movements coarse. On rotation ten times, spontaneous nystagmus to side stimulated is increased, while to the opposite side, spontaneous nystagmus disappears for fifteen seconds. Nystagmus is not labyrinthine.

November 28, 1917, Dr. Wendel and I established among other things the following:

To right: Sometimes a quick and slow component, sometimes even components.

Nystagmus much more marked when looking to left than when looking to right.

No nystagmus when looking straight forward, but nystagmus when looking upward.

After turning three times to right: Nystagmus to left of vestibular type.

After turning three times to left: Nystagmus to right.

Pastpointing on turning.

Romberg: Falls to right.

In December Dr. Crane found:

1. Eyes turned to the left: Rapid, fine nystagmus at times. Occasionally a slower nystagmus with a quick component to the left.

2. Eyes to the right: Coarse, slow nystagmus, with quick component to the right.

3. Eyes turned directly upward: Nystagmus varies: (a) Sometimes there is a vertical nystagmus with the quick component upward. (b) Sometimes there is a rotary nystagmus.

4. No vertigo.

5. No falling.

6. No pastpointing.

VESTIBULAR TEST

1. Rotated 10 times to left in 20 seconds: Head 30°. Nystagmus with quick component to the right for 36 seconds. Vertigo present.

2. Rotated 10 times to right, in 20 seconds: Head 30°. Nystagmus with quick component to left for 34 seconds. Vertigo present.

3. Rotated 10 times to left, in 10 seconds: Head 30°. Pastpointed to left four times with each hand.

4. Rotated 10 times to right, in 10 seconds: Head 30°. Pastpointed to right, one time with right hand, and two times with left hand.

5. Rotated five times to left, in 10 seconds: Head 90°. Patient fell to left but felt as though he were falling to his right.

6. Rotated five times to right, in 10 seconds: Head 90°. Patient fell to right but felt as though he were falling to his left.

January 26, 1922, Dr. Lewis Fisher of Philadelphia kindly presented the patient to a post-graduate class and found the following:

TESTS OF THE VESTIBULAR APPARATUS

SPONTANEOUS NYSTAGMUS

Looking to RIGHT
Horizontal Nystagmus to right.
Looking to LEFT
Horizontal Nystagmus to left.
Looking UP
Vertical Nystagmus.
Looking DOWN
No Nystagmus.

Nystagmus, yes.
Vertigo, no.
Past-pointing, no.
Falling, no.

Romberg, very slight.
Turning head to right, slightly increased.
Turning head to left, slightly increased.
Attempt to overthrow, spasticity of muscles.

TURNING

To RIGHT, Nystagmus to left.
Amp. large, rapid.
Duration 40 sec.

Vertigo, 10″

To LEFT, Nystagmus to right.
Amp., large, rapid.
Duration, 35 sec.

Vertigo, 8″

CALORIC

Douche RIGHT
Amp., O.
After 4 min.
Head Back, Nystagmus to right.
Amp., good, rapid.

Douche LEFT
Amp. O.
After 4 min.

Nystagmus, tendency right conjugate deviation.

Head Back, Oblique.
Amp., good, rapid.

No Past-pointing.

Fisher came to the conclusion that we have to deal with multiple sclerosis.

"The cerebellum is not affected because the patient does not pastpoint, otherwise he would have a completely destroyed cerebellum. The stimuli do not go through. The pedunculi are affected by a process in the brainstem involving some of the pedunculi of the cerebellum, pons and medulla. The deviation is not sufficient to determine right or left side. Sunstroke was the match that exploded the powder barrel."

I had the good fortune to have Barany while he was giving a post-graduate course in Detroit, December, 1922 present the patient to the class. Barany found that the patient had a lasting spontaneous nystagmus when the head was bent to the side as he described it first in 1913.

When the head was bent to the right there occurred a lasting horizontal nystagmus to the left and vice versa when the head was bent to the left a horizontal nystagmus to the right. Barany has seen this phenomenon in multiple sclerosis, also when a tumor of posterior cranial fossa was present, also once in vestibular labyrinthian attacks of dizziness. In this case Barany thought of multiple sclerosis on account of the spontaneous nystagmus which was always present and on account of the absence of tumor symptoms. One must think that the phenomenon is caused by lesion of the otolith apparatus, but how is still entirely unclear. Barany cannot express himself concerning the etiology, insolation, as he has absolutely no experience in this respect. (Letter).

August 19, 1923. The patient says that he felt bad during the first two years of his sickness but that he improved steadily during the last four years. There seems to be no tremor of the hands. He does not complain of headache or dizziness. He is the father of four children, among them a girl two years and eight months and a boy seven months old. He stated again, that his sickness began with the attack on July 31, 1917, that he was walking in the yard when he felt something like a wind approaching him that he then felt pain on top of his head and something in the right parietal region and fell down "like dead." The nystagmus persists. For the last one and one-half years he is doing manual work as a laborer.

F. Kobrak (Practical Otology for Physicians 1918, page 91) says that we find in multiple sclerosis a normal reaction of the vestibular nerve and mostly horizontal nystagmus with a slight rotary component. Frequently there is also a vertical nystagmus especially when looking upward. Without causing violent symptoms, there may be attacks of transitory deafness and lack of vestibular reaction with complete or almost complete recovery.

RESUME

Symptoms which are or have been present:

1. Pain in right parietal region, in right and somewhat in middle occipital region, and in right eye.
2. Nystagmus.
3. Transitory abducens paralysis.
4. Fundus changes, right disc partially pale.
5. No double vision.
6. Field of vision: normal.
7. Double facial paresis. Face appears a little mask-like.
8. Tongue, when shown first, deviated a little to left side, then adjusted to middle line.
9. Thick speech.
10. Adiadokokinesis right hand.
11. Weakness of right hand compared with left.
12. Absence of abdominal reflexes.
13. Exaggerated patella reflexes.
14. Motion in left leg uncertain.
15. Weakness in both legs.
16. Babinski positive on right.
17. Absence of tremor.
18. Static ataxia.
19. Walked distinctly to right.
20. Romberg: sways to right.
21. Labyrinths react.
22. Pastpoints on turning.
23. Moderate diminution of hearing in left ear, very little on right.
24. Wassermann negative.
25. Some symptoms noticed before sunstroke, July 31st?
26. Patient claims that disturbance existed only since he worked in hot weather in the open.
27. Patient says that he feels better in summer when the weather is cool.

SUMMARY

The whole symptom complex resembled somewhat that of multiple sclerosis. It was, therefore, only natural, while trying to elucidate the disease entity, to consider the same from the following points of view:

1. Did the patient suffer from a potential or latent multiple sclerosis before the sunstroke?
2. Did a multiple sclerosis develop after the sunstroke, and was the sunstroke the only responsible factor?
3. Did the sunstroke cause pathological changes in the central nervous system which are similar to those in multiple sclerosis but have no connection with multiple sclerosis?

When we consider the clinical symptoms and the pathological changes in multiple sclerosis we must come to the conclusion that a multiform and varied picture presents itself, which does not always, it would seem, furnish sharp and distinct features.

Oppenheim states that multiple sclerosis can exhibit the picture of spastic spinal paralysis, or there can be a combination of spastic spinal paralysis with partial atrophy of the optic nerve. Also hemiparesis spinalis may be present. In other instances the bulbar symptoms come to the foreground, or the picture of amyotrophic lateral sclerosis may be seen. In some patients who afterward showed multiple sclerosis Oppenheim could first establish an acute inflammatory affection of the medulla. These and other cases showed plainly that multiple sclerosis can develop from a post-infectious disseminated myelo-encephalitis. Oppenheim states that multiple sclerosis may be combined with tabes dorsalis (Westphal, Mills) with paralysis agitans (Oppenheim and Jolly) with infantile myxedema (Raymond-Guillain)

with syringo-myelia (A. Schueller). A case diagnosed by Westphal as multiple sclerosis presented at autopsy a tumor of the thalamus opticus. Furthermore, Oppenheim states that there exists a general affection of the blood vessels of the central nervous system of probably toxic origin, which creates a symptom complex which resembles very much multiple sclerosis but which is not caused by sclerotic foci but by multiple cerebrospinal foci of softening with secondary degeneration of the fasciculi in the brain and spinal cord (Oppenheim). Also encephalomalacia multiplex, caused by arteriosclerosis can present symptoms similar to those of multiple sclerosis. The variety of the histoligic pictures in different cases of multiple sclerosis caused Oppenheim and also Bornstein to express the opinion, that a distinct unity of the anatomical process cannot be assumed.

Cadwalader and McConnell say in an essay on symptoms of multiple sclerosis that "for the purpose of logical discussion it is necessary to state briefly that the clinical and histological evidences that have been recorded up to date seem to us to be strongly in favor of the view that the disease possesses a distinct entity, and that it is essentially infectious in origin and inflammatory in character not withstanding the fact that there is considerable evidence to show that the symptoms of multiple sclerosis may be produced by other diseases."

Oppenheim states: "Some authors explain the symptoms of insolation by hyperemia of the brain; others by thrombus and multiple capillary hemorrhages in the medulla oblongata, etc., yet also anemia, edema of the pia, meningitis and finer changes in the cells have been found respectively surmised. The clinical symptoms of the so-called heatstroke are quite varying. For instance, increase in temperature, headache, mental disturbances, loss of consciousness, respectively, deep coma with considerable rise in temperature, paralysis of a paraplegic or hemiplegic character, disturbances of speech, ataxia, etc."

Lambert says in part: "The meninges of the brain are congested, and there is more or less abundant subpial fluid. The brain itself is usually firm and not congested, with sometimes a little bloody fluid in the ventricles. The membranes of the spinal cord are congested, the cord being firm and about normal in appearance. In the minute cellular structure of the brain we find changes which are much more constant and which are fairly characteristic.

"Dr. Ira Van Gieson has described these lesions in the neurons of the brain and cord, as an acute parenchymatous degeneration of the ganglion cells best shown by the Nissl stain and counterstain with eosin. The appearances seem to be more often found in the anterior horns of the spinal cord where the changes do not seem to have advanced so far as in the cerebral cortex and cerebellum."

Under complications, Lambert mentions that meningitis and encephalitis are not uncommon complications. Delusional insanity with ideas of persecution and hallucinations of various kinds are frequently observed.

CONCLUSION

Syphilis of the central nervous system may cause the most varied symptoms, encephalitis lethargica may act in a similar manner. The various pictures of a disease of the central nervous system depend mainly on the localization of the lesion. There appears to be sufficient evidence to prove that grave and lasting injuries to the central nervous system can be caused by insolation. It is not surprising that such disturbances may be of a nature which show symptoms similar to those caused by multiple sclerosis and kindred diseases. This, however, does not permit us to assume that we have a typical multiple sclerosis before us.

It may not be impossible that the clinical entity which goes at present under the name of multiple sclerosis must be divided in the future under many headings. As a parallel may be mentioned the consideration of the Menie'res symptom complex. This, however, is beyond the scope of this paper.

It is my opinion, that the pathology and clinical symptoms of sunstroke justify the classification of insolation as a disease of the nervous system. The proper name, for the type exemplified by this case, might be "insolation encephalitis," not as a complication but as the disease itself.

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DISCUSSION

DR. THEOPHILE KLINGMANN, Ann Arbor: From a diagnostic standpoint, Dr. Amberg's case is very interesting. It brings us back to the old idea that multiple sclerosis may possibly be caused by exposure to extreme heat or extreme cold. That is the idea you find in some of the old books, and is even adhered to at the present time by some neurologists. Perhaps that is the foundation for some experiments made by exposing animals to extreme heat or extreme cold and in that manner producing a complex which is not unlike a multiple sclerosis. But in all probability it is not that at all—it has not been proven at post mortem—but what has been shown is that these animals have an acute hemorrhagic encephalitis.

In this paper that Dr. Amberg has given us we have the history and the results of the examination, and a number of symptoms which cannot be accounted for by this particular pathology. In the first place, the most important symptoms that we have here (we can rule out a pure acute hemorrhagic encephalitis) would be the involvement of the pyramidal tract. The observation that the patient had a Babinski reflex means the involvement of the pyramidal tract. The hemorrhages in this type are superficial, they are cortical, they do not involve the deep tracts. Then there is the persistent loss of the umbilicus reflex. That is not the case in heat stroke. You may find it present immediately after the stroke because of the general lack of function of the cerebral component of this particuar reflex, but this is one of the earliest symptoms of multiple sclerosis and is almost constantly present.

Another interesting point was the eye findings which Dr. Amberg has described, that is, the paling of the disc of one of the eyes. I did not hear him mention anything about the visual field. He says the field of vision was normal. Whether he means in the way of examination for color fields, I do not know—or for scotoma. If this patient has a positive scotoma—and I rather suspect that is true from the condition of the eye described, I would not hesitate, with those three symptoms, to make a diagnosis of multiple sclerosis. I think they are pathognomonic.

However, we cannot account for all of the symptoms under this head. In the first place, extreme heat retention, present in this case in the beginning, is a constant thing in heat-stroke. It does not occur in multiple sclerosis. There are not cases of heat-stroke without that temperature retention. So you cannot place the case in any one particular group.

Another thing I would like to call attention to is the history of some previous condition a long time before this particular incidence occurred—the man staggered and was observed by his employer and was supposed to have been drunk. That was not the case, as was probably proven later.

In going over the chief symptoms of heat-stroke the first and most important one is the heat retention within the body. Sometimes this is known as sun-stroke. Of course, it is simply retention of heat —the particular rays have nothing to do with the condition. The temperature usually goes very high. In about 50 per cent of heat-stroke cases there are convulsions. There were no convulsions recorded in this case. They are usually epileptiform in character—they may be of the Jacksonian type. One can account for that, because it depends entirely upon the location of the lesion. It may be scattered, or localized. The hemorrhages may be small, or they may be larger—they vary. Other spasms may be present—of the pharynx, the diaphragm, etc. You may also have fibrillary twitchings, or there may be coarse tremor. Nystagmus is nearly always present, at least early in the condition. In the differential diagnosis the type of nystagmus is rather important—whether it is purely a searching movement, whether it is a pseudo-nystagmus, or a true nystagmus. The pseudo form occurs in about 50 per cent of cases of multiple sclerosis. Pseuronystagmus is present in a great majority of cases of heat-stroke. True nystagmus is present in about 12 per cent of cases of multiple sclerosis, and rarely ever present in heat-stroke. Of course, in heat-stroke we have various palsies—hemiplegia, monoplegia, bilateral facial paralysis, etc., but these are usually transient. As soon as the acute symptoms disappear, unless you have a localized, large hemorrhage, they do not persist. In the same way you have aphasia, dysarthria, and perhaps all of the symptims which would come under the head of epibulbar palsy, but usually transient.

The cerebrospinal fluid is important. In heat-stroke the cereborspinal fluid is usually obtained under tension. This report on the cerebrospinal fluid was negative. I wonder if it was negative from the standpoint of cell count, or chemical tests, or whether it just means it is negative to the Wassermann. In heat-stroke the cerebrospinal fluid is seldom negative. In the first place, you have a leukocytosis; later this changes to a lymphocytosis. It may persist for a long time, or it may disappear within a week or two. It is nearly always under pressure, and it stands to reason it should be, because you do have an increase in cranial pressure in heat-stroke. You have an oedema in connection with the rest of the pathology that has been mentioned.

As to the mental signs, usually in the beginning they are severe, amounting to coma, a marked clouding, with later a delirium which gradually clears up in a short time, although a certain amount of psychic disturbance may continue in the form of hallucinations, but these usually are not present.

Formerly, this condition was regarded as either a serous meningitis, or a meningeal encephalitis. I believe the symptoms which would lead one to regard the involvement of the meninges—the pathology underlying these irritating symptoms which would refer to a lesion of the meninges—are usually due to pressure; that there is actually no involvement of the meninges in heat-stroke; that the condition is really not a meningitis, but it is a true encephalitis with hemorrhage. In other words, I have placed heat-stroke under the heading of acute hemorrhagic encephalitis, and I think you will find that is the contention of most writers of recent date.

I have here a tabulation of the symptoms which Dr. Amberg presented. He speaks of abducens paralysis. That would come under the head of a bulbar lesion and it is usually transient. Of course, we must remember that in multiple sclerosis many of these symptoms are quite transitory, that in all probability they are dependent upon a temporary circulatory disturbance, either arterial spasm or an oedema in a region where a new contact is being formed.

I myself am uncertain whether multiple sclerosis is at all an inflammatory process. I doubt it very much. I have my own ideas about the pathology, although I am not ready to exploit them just yet. But the main point is this, that we know that multiple sclerosis is increased, there is an exacerbation of multiple sclerosis, when patients are exposed to extreme heat or cold. They are much better in a moderate temperature.

In this particular case there are certain symptoms which cannot be accounted for by heat-stroke. I believe therefore from this analysis that the condition is one of perhaps more or less long standing, if I may use that expression, of a moderate type, that it is progressive, and in addition that exposure to extreme heat simply caused an exacerbation of the condition with a temporary oedema and possibly some hemorrhage such as you would get in acute hemorrhagic encephalitis.

DR. EMIL AMBERG (closing): I thank Dr. Klingmann for his very liberal and fair discussion. I think the subject requires a great deal of study in the years to come.

TEMPORAL VARIATIONS IN CEREBRAL LOCALIZATION

Medical students have been taught for some time that the cerebral centers which originate voluntary motor impulses are located in the ascending frontal convolution immediately in front of the precentral fissure, a center being distinguishable for each muscular grouping of the body. The importance of this doctrine is exemplified in the modern surgical treatment of many cases of jacksonian epilepsy. By trephining the skull over the affected center and removing the source of irritation there, such as a meningeal tumor or a spicule of bone, some phenomenal cures have been instituted, attesting the great significance of the doctrine of cerebral localization of motor function in practice. More recently, however, physiologists have begun to question somewhat the validity of the experimental evidence commonly adduced in this connection. There were reports that the responses elicited from a given cortical center were not always the same; thus, if a point giving a certain response was stimulated immediately after a previous stimulation, the result in respect to motor response was sometimes altered. In other instances observed by competent experimenters, successive stimulations of a cortical point resulted in dissimilar movements, after intervening stimulation of other areas. Some of these "deviations of response" involved changes as great as that from finger to shoulder movements and even overlapping of the face and arm areas.

Thus there has arisen some tendency to discredit anatomic localization of the motor function centers in the brain. Summarizing the situation, Lashley[1] of the University of Minnesota has pointed out that possibly each cortical point is capable of calling out a primary reaction which is relatively stable, although capable of temporary modification: it is possible that the reaction elicited from each motor point is wholly dependent on previous conditions of stimulation, and that apparent anatomic localization within the motor area arises only through the relative constancy of dynamic conditions within the time limits of the experiment; or the truth may lie somewhere between these extremes, in a gross anatomic localization within which the finer movements are determined by transient physiologic conditions.

In Lashley's own recent observations of the effects of electrical stimulation in the region of the precentral gyrus of the monkey, in each test the reactions were almost constant, subject to slight deviations resulting from the order of stimulation. In the different tests, the general fields from which movements of the face, arm and leg segments were elicited tended to remain constant, although the borders of the field were inconstant. Within the arm area, stimulation of the same point in different tests resulted in widely different movements, and at different times the same movement was obtained from widely separated and shifting areas. The results suggest that within the segmental areas the various parts of the cortex may be equipotential for the production of all the movements of that area, and that the particular movements elicited in any test depend on the temporary physiologic organization of the area rather than on any point-for-point correspondence between pyramidal and spinal cells. It cannot be denied, however, that there is some morphologic basis for the differentiation of function in the larger segmental divisions of the gyrus.—Journal of A. M. A. Oct. 20th.

1. Lashley, K. S.; Temporal Variation in the Function of the Gyrus Precentralis in Primates, Am. J. Physiol. 65:585 (Aug.) 1923.

UNIVERSITY CLINICS

Clinics will be held at the University Hospital, Ann Arbor, by members of the staff, on the second Wednesday of every month from November to July inclusive. Visitors will be taken upon ward rounds in the several services at 9 a. m. Later in the forenoon, and in the afternoon and evening there will be clinics and demonstrations. Notices of every meeting will be mailed in advance. Should you not receive your notice, come anyhow.

THE JOURNAL IS YOUR FORUM—
WE INVITE YOU TO UTILIZE IT
FOR THE EXPRESSION OF
YOUR VIEWS ON MEDICAL SUBJECTS

The Journal
OF THE
Michigan State Medical Society
ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

PUBLICATION COMMITTEE
R. C. Stone, Chairman.....Battle Creek
B. R. Corbus.....Grand Rapids
J. D. Bruce.....Saginaw

Editor and Business Manager
FREDERICK C. WARNSHUIS, M. D., D. Sc., F. A. C. S.
Grand Rapids, Mich.

Entered at Grand Rapids, Michigan, Postoffice as second class matter.
Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized July 26, 1918.

All communications relative to exchanges, books for review, manuscripts, news, advertising, and subscriptions are to be addressed to F. C. Warnshuis, M. D., 4th Floor Powers Theater Building, Grand Rapids, Mich.
The Society does not hold itself responsible for opinions expressed in original papers, discussions, communications, or advertisements.

Subscription Price—$5 per year, in advance

NOVEMBER, 1923

Report Malpractice Threats Immediately to Doctor F. B. Tibbals, 1212 Kresge Building, Detroit, Mich.

Editorials

TO AUTHORS

During our recent Annual Meeting there were some seventy-five scientific papers that were read before our several sections. These papers are all for publication in The Journal. Having read a paper, the author is rightly interested in it's early publication. Therefore the following statement is made for their information.

On account of financial limitation, The Journal can publish about eight papers each month. It then is very evident that there must be a delay of some eight months before some of the papers that were read at our Annual Meeting appear in our Journal.

In the selection of scientific articles it has long been the editorial policy to cause each issue to contain a variety of papers covering the general and special branches of practice. This is done in order that those interested in special work will find some article that will be of personal interest to them.

Proofs of articles are sent to the author before the paper is published. When proofs are sent they are accompanied by a reprint order blank, thereby giving the author opportunity of ordering as many reprints as he desires.

We desire to give the assurance that your paper will be published just as soon as possible. There are no favorites. The only rules that govern are: (1) Variety of subjects. (2) Seasonal application. (3) Space limitation. It is felt that this statement should be made for the information of those concerned.

DOCTORS AND PATIENCE

The title of this editorial is the title of a book that is written by Dr. Harold M. Hays of New York city and just issued by The Cornhill Publishing Company of New York. We are not frequently given to utilizing these editorial columns to review books. In this instance, however, we feel that there exists an exception. That exception is the realistic discussion by the author of pertinent medical problems confronting all doctors, and especially those who are just starting out in practice. The second exception is that we feel that a wonderful amount of good will be accomplished if this book receives nation-wide distribution. We are eager to see that it obtains a wide distribution in Michigan. It is a timely and human book.

Dr. Hays has put, in an interesting manner, the problems that the younger graduates meet in the early years of their careers. Vividly does he point out the fundamental principles of medical and moral ethics. In a similar manner does he handle fee splitting, patenting of instruments, reading of medical journals, affiliation with medical societies, research work, business methods, case records and similar allied topics. We are aware that there exist a number of texts and articles that have been written upon these subjects and much wholesome advice imparted. Dr. Hays has, however, woven them into the form of a novel, thereby surrounding them with a human, personal application. He inspires ideals by indicating how the young man can have ideals, stick to them and be successful.

The main character is Dr. Snaith, who has just completed his interneship and enters practice. The vicissitudes of his first year are realistically described so that almost every doctor, recalling his first few years of practice, will find a narrative of personal experiences. The chief character is carried on to final success and of course there is interwoven in his struggles a charming love story.

We are going to say nothing more about the story or further contents of this book. We want the doctors of Michigan to read this

book. We want you to place a copy in the handes of your younger medical friends. Attending men on hospital staffs would do well to cause this book to be their Christmas gift to their internes. The wholesome inspiration that emenates from this book is what we need and we are more than pleased that Dr. Hays has provided it.

ARMISTICE DAY

On November 11th, we celebrate the fifth anniversary of the signing of the Armistice that terminated the World War. It seems but yesterday when the news was broadcasted that the war was ended. Much has happened in these fleeting five years. The tribulations of war are commencing to become dimmer. We have forgotten about meatless, sugarless, breadless, gasolineless days. Most of us have spent or traded our Liberty Bonds. Our War Savings Stamps have been turned in for some damphoul thing. We are rapidly forgetting about that war. Are we forgetting those who made the Supreme Sacrifice? Are we forgetting those who are still among us, but who are handicapped by their wounds and physical disabilities? Heaven forbid!

The Unknown Soldier rests in his Valhalla. The bronze tablet, erected by our State Medical Society, in memory of those of our members who gave their lives, still hangs outside the entrance to the Medical building on the University Campus in Ann Arbor. The poppies still grow in Flanders. The crosses are still white at the head of the graves of those who lie asleep in French soil. Our Flag still flies over those cemeteries. But is this all that we owe to our dead and wounded? Dare we commence to forget?

Armistice Day should serve to help us to remember. Armistice Day should witness the subscription of loyal and sincere tribute to our soldier dead. Armistice Day should witness our contribution of part of that day to the performing of some act that will lighten the burden and gladden the heart of some one or more of Our Boys who are silently paying the price by reason of his wounds or disabilities. Armistice Day should witness a flower, a message or personal word being given to her, mother or wife, whose son or husband, did not return. Armistice Day, at 11 o'clock should find us pausing and paying silent tribute to all those dead and living who made Armistice Day possible.

So we urge that on this fifth anniversary of the Signing of the Armistice, every one of our members and readers, as their patriotism and judgment directs, observe to a full degree the celebration of that day.

AMERICAN MEDICAL ASSOCIATION BULLETIN

By action of the House of Delegates of the American Medical Association, the Bulletin of the Association, which is the official journall of the House of Delegates, is to be sent to every Fellow of the Association. We quote the folllowing from the October issue:

The report of the Secretary presented to the House of Delegates at San Francisco suggested that the American Medical Association Bulletin be sent to all Fellows of the Association. This suggestion was endorsed by the Board of Trustees and by the Reference Committee on Reports of Officers, and was favorably acted on by the House of Delegates. Beginning with this number, therefore, the Bulletin finds itself with a circulation of approximately ten times that which it formerly enjoyed. It has aspirations to be ten times better and more serviceable than heretofore. Its ambition can be realized only through the active co-operation of those to whom it will be sent and who are supposed to read it; namely, the more than 54,000 Fellows of the American Medical Association and the officers of constituent and component medical societies. To this great group of about 60,000 of the country's most progressive and influential physicians, the Bulletin appeals for such assistance as will enable it to satisfactorily meet the purposes it is intended to serve.

NOT FOR SCIENTIFIC PAPERS

No strictly scientific articles will appear in the Bulletin. The Journal of the American Medical Association and five special journals published by the Association are adequate for presentation of material in that field. The columns of the Bulletin are open to the Fellows and members of the Association for the discussion of questions bearing on medical organization, medical economics, medical ethics and other subjects not strictly scientific in character which may be of general interest to physicians. It is especially desired that the officers of state, district and county medical societies, chosen as they have been by their Fellows to occupy positions of leadership, will utilize the Bulletin for discussion of organizational problems and to describe the methods they have found valuable in increasing professional zeal and organizational efficiency.

In point of size, the Bulletin will not be a very pretentious publication and so cannot accept very long articles; but it will be large enough to accommodate several contributions of reasonable length each month and, at the same time, to carry items of interest concerning the work of the American Medical Association and its component and constituent societies. The Bulletin has no ambition to excel as a literary production and will make no claim to any great merit in that particular. Fellows who do not feel themselves to be finished writers need have no fear, in offering contributions, that its editors will assume a "highbrow" attitude and exclude their offerings because they do not stand out as gems of literature. Polite and understandable English will be all that is required, since the style and diction of the masters are not needed for an intelligent discussion between physicians of the subjects that should be discussed in the Bulletin.

Of course, all material that is submitted for publication will be subjected to editorial scrutiny and the usual editorial prerogatives will be exercised. The purpose of the Bulletin will be, however, to

foster polite debate and to have presented the varying points of view of the members of the American Medical Association, and thereby to aid in crystallizing opinion and bringing about permanent solution of questions and problems that need to be solved. To this end, contributions are solicited for the Bulletin from any Fellow or member who feels that he can offer helpful suggestion.

Those of you who are Felllows of the A. M. A., will find the Bulletin reaching you the first of each month. We urge that you read it. Then let the editors have your views upon medical problems and organizational activity. The Bulletin is your national forum—use it.

Those of you who are members of the A. M. A., but have not made application for Fellowship, we urge that you promptly take the necessary action to become a Fellow. You will receive the Bulletin as one of the personal benefits of Fellowship. Send in your application today.

JACKSON COUNTY ANNUAL CLINIC

The Third Annual Clinic of the Jackson County Medical Society was held in the W. A. Foote and Mercy Hospitals, in Jackson, October 16-17-18-19.

The following Clinical Program was carried out in detail:

October 16th

9 to 12 a. m.—Surgical Diagnosis. V. C. Lespinasse, M. D., Chicago.

2 to 5 p. m.—Genito-Urinary Diseases. W. F. Martin, M. D., Battle Creek.

8:00 p. m.—Lantern Slide Lecture: "Experimental Work on Reproductive Organs of Fowls and Small Animals." V. C. Lespinasse, M. D.

October 17th

9 to 12 a. m.—Neurology. C. D. Camp, M. D., Ann Arbor.

2 to 5 p. m. — Dermatology. Rollin H. Stevens, M. D., Detroit.

October 18th

10 to 12 a. m.—Chest Clinic. J. S. Pritchard, M. D., Battle Creek.

2 to 5 p. m.—Internal Medicine. C. E. Stewart, M. D., Battle Creek.

8:00 p. m.—Chicken Dinner and Dance. Address: "Relation of Doctors to Themselves and Organized Medicine." F. C. Warnshuis, M. D., Grand Rapids.

October 19th

9 a. m. to 5 p. m.—Surgical Clinical. Max Ballin, M. D., Detroit.

Committee in Charge of Clinic

Geinto-Urinary — C. D. Munro, M J. Mc Laughlin.

Neurology—C. R. Dengler, E. F. Lewis.

Dermatology—H. A. Brown, H. Porter.

Medicine—T. E. Hackett, C. Corley.

Surgery—E. C. Taylor.

President—J. C. Smith.

Secretary—D. Burr Marsh.

This is a splendid plan of organized County Society activity. For four days the doctors of Jackson convene in their home city and pursue a post-graduate course of clinical study and conference. As in the two previous years, abundance of clinical material was available as for instance, 13 majory surgical cases were presented, 45 dermatological cases, 23 medical, 16 chest and some 20 neurological cases. These were carefully worked up and then presented and all recent knowledge pertaining to each case was discussed.

Our real medical problem today is getting to the people adequate medical service. This can be done only as the members of the medical profession are competent to deliver such service. Jackson county physicians are maintaining that competency by these clinics. Other counties might well emulate Jackson county's plan. That is what organized medicine needs.

INCREASED MEDICAL MEETINGS

A recent county announcement states that on account of the increase of medical meetings, particularly staff meetings of the various hospitals, it is decided to hold but one County Society meeting each month.

A simple announcement, but fraught with much import. Is organized medicine giving way to special fields, special local activity? It is conceded that we are almost "Medical Meetinged to Death." If many men kept their "meeting dates" from three to four evenings a week would be reserved for attendance on some medical meeting. That is more than any active man can stand. But why, within a few years, all these meetings?

There are staff meetings, of which each hospital has one a month; Hospital Service meetings; Executive Staff Committee meetings; Public Health Clinic meetings; School Clinic meetings; Specialty Society meetings; District Council meetings and County Medical Society meetings. Meetings of every type galore. Small wonder we are wearing of them. Eagerly do we seek to eliminate and "cut down." In doing so why pick on the County Medical Society—the foundation of our organizational prestige and preservation? Foremost of all medical organizations and medical meetings, the County Society must maintain pre- eminent position. If curtailment of meetings are demanded do not permit the County Society to be the one to relinquish its leadership. Monthly hospital staff meetings are necessary. The

separate services conferences can be held the same evening and so too can the meetings of special societies be combined with the staff meeting. Again, we repeat, keep the meetings of your County Society as they have been and limit th other subsidiary organizational meetings.

Editorial Comments

Someone has observed that the largest doctor's signs always indicate the smallest doctor.

The question of the amount to which our dues should be raised will be determined to a degree by the patronage that our members give to those firms that advertise in the Journal. We have repeatedly stated that we cannot hope to have a substantial advertising income if we do not patronize those who use our advertising columns. A firm will gladly spend money for advertising, providing that it receives a fair return upon its investment. Business men will not buy advertising space in publications that do not bring them business. The expenses of the Journal and the Society may be lessened by a large advertising revenue. We cannot secure this income if you, Doctor, do not do your part and patronize those who advertise in your Journal. It is no more than fair that you give these business firms preference when you buy your supplies. Tell them that you are giving them your patronage because they do advertise in your State Medical Journal. Tell the detail man that you cannot give him an order because his firm does not use the Journal's advertising columns. If you will subscribe this support and co-operate in this manner, we will obtain greater advertising revenue. You in turn will not have to meet the otherwise certain deficit by paying much higher dues. Turn to our advertising pages. Become acquainted with our advertisers and then patronize them.

Speaking of patience, we do not know any better way to teach a boy patience than to assign him to the task of taking out the family milch cow to the pump in the valley for water twice a day during the months of January and February when the thermometer registers around the zero point. If you have never done it, try it. We still vividly recall the days when that task was ours. We know of nothing that will tax your patience in waiting until that cow has eventually cooled its tongue and mouth so as to take in its normal amount of water. You can become as exasperated as you want, with the wind blowing and feet numbing and your fingers freezing, that cow won't drink until she gets good and ready. Cussing does no good. You can't lead her away. You simply have to wait and in so doing you develop patience. Try it and see. You can correct your restless boy by assigning the task to him.

The joint committee on Public Health Education held a meeting in Ann Arbor on October 8. President M. L. Burton was elected chairman, Dr. W. T. Dodge, vice-chairman; Professor W. D. Henderson, secretary of the committee for the coming year. Arrangements were made to deliver health lectures to the students of the several literary colleges in the state. Plans also were adopted for the assignment of lectures before civic and social organizations. The chairman of the Council was requested to urge county medical societies to assume an increased activity to bring about the holding of more of these public meetings in their respective counties. The committee will hold its next meeting in Detroit on January 16.

Speaker Moll has appointed the following committee on revision of the constitution and by-laws: J. G. R. Manwaring, Flint; W. J. Wilson, Detroit; T. F. Heavenrich, Port Huron. The committee is to bring in its report at the next annual meeting, to be held in Mount Clemens.

President Connor has appointed the following special advisory committee to the Michigan Commission of Health: Doctors J. G. R. Manwaring, Flint; George L. LeFevre, Muskegon; N. M. Allen, Detroit; J. D. Bruce, Saginaw; A. M. Campbell, Grand Rapids.

Daily papers still feature adrenalin as a wonderful new drug with remarkable life-restoring properties. It is endowed, according to the press, with most mysterious properties that will "raise the dead." The actual properties of adrenalin have been known for 50 years and used for at least 25 years. Such spasms of newspaper publicity emenate from some fool doctor, in an out of the way place or clinic, bidding for personal advertising. Now that adrenalin has had its day it's about time someone bursts forth on nitroglycerine or pituitrin. Of the two, pituitrin in obstetrics, should furnish an abundance of sensational copy.

Carrie Jacobs Bond has written a song and a line of it says: "You neber get no hittin till your haid's above the line. If you hyah yo foes attackin, you know you's doin' fine." There is a lot of truth in these words of a songster. If you are just traveling with the mob and in a rut, you arouse no personal interest. But—just as soon as you forge ahead, do something, attain something, your head raises above the mob—and then the "hittin'" commences. The assailants are usually the jealous, envious plodder, who seeks to retard and penalize your initiative. But you can rest assured that when the "attackin' begins" your are forging ahead—just ignore the knocker.

"Cancer" is the title of a new journal that is to be issued quarterly in the best interests of ascertaining facts regarding cancer and its treatment. The October issue is the first number. The editor is L. Duncan Bulkley, assisted by C. D. Daniels. The publishers are the F. A. Davis Company.

The Annual Conference of the Secretaries of State Medical Societies will be held in Chicago November 16 and 17. Presidents of State Societies are also invited. Organizational efficiency will be the general topic for discussion.

Correspondence

The Editor of the Journal of the Michigan State Medical Society:

Will you please announce in your Journal of the Michigan State Medical Society that the next regular meeting of the Chicago Orthopedic Club will be on Friday, November 7 at 8 p. m., Room 1308—30 North Michigan avenue, corner of Washington street.

A very interesting program is arranged. Instructive moving pictures of orthopedic operations

will be shown. A cordial invitation is extended to all those who are interested.

Telephone: Central 8500.

JOHN RIDLON, President.
H. B. Thomas, Sec. and Treas.

THE VENEREAL LAW

The Editor of the Journal of the Michigan State Medical Society:

I see by the last Journal that a physician of Grand Rapids was arrested for violating the venereal law and that the judge acquitted him. The physician should be congratulated for violating the law and the judge, also, for acquitting the physician. Physicians who have any respect for their patients will violate the law, which is the most absurd law in Michigan. It might interest the physicians of Michigan to know about the parentage of this law. When this law was in the formation stage there was a meeting of the State Health Commission and the druggists. A part of this law was left to the druggists and part to the Health Department to finish. That part of the law prohibiting physicians from giving treatment to their patient (except at the office) was left to the druggists, the Health Department having nothing to say about it. The druggists were looking to their own interest, not to the patients' or physicians' interest.

I would suggest that the Health Department call another meeting of the druggists, also invite Dr. Weil and Dr. Rockwell to this meeting. The doctors might possibly have some suggestions regarding this law, which could make it possible for physicians to respect.

H. A. BISHOP, M. D.,
Millington, Mich.

The Editor of the Journal of the Michigan State Medical Society:

Will you please answer through the columns of The Journal some of the following questions? The reason why I desire these questions answered this way is on account of the many inquiries made by my friends and acquaintances here in Brown City.

1. Is it possible to diagnose any existing disease conditions by means of the Abrams electronic device?

2. Has Abrams demonstrated any cases that he has cured?

3. What standing has Dr. H. Farnham, whose office is located at Virginia Park and 12th streets, Detroit, Michigan among medical men?

4. Is this Dr. Farnham a member of the Wayne County Society at the present time? Has he ever been a member?

5. What Medical School did he graduate from?

6. What kind of Electrical Reaction does a patient receive from Dr. Farnham's Electrionic Treatment machine which he is selling for $150.00?

There have been quite a number of people in this vicinity who have taken treatments from this Doctor and some claim that they have been benefited. A saleslady called today and tried to sell me a machine. It has a Violet Ray attachment or High Frequency current, and in addition had what she termed an Electrionic current which possessed great curative powers. She also stated that they had cured a great many cases of T. B., Cancer and Syphilis. She claimed that this machine was not an Abrams machine but one which was greatly improved upon by Dr. Farnham and was called Dr. Farnham's treatment.

There are a great many people who contemplate buying one of these machines and I think that they should be advised as to whether they will receive any benefit from same. If you will please answer these questions or at least as many as possible I will greatly appreciate it.

Thanking you, I am,

Yours very truly,
Dr. R. G. Tuck.

REPLY

1. The so-called "Abram's Oscilloclast" and "Electronic Device" has been exposed by the American Medical Association. Write to the Secretary, 535 N. Dearborn Street, Chicago for pamphlet that imparts the details. Abram's theories and methods are not accepted as of value or merit in the diagnosis and treatment of disease.

2. The doctor mentioned is not a member of the Wayne County Society and we have no record of membership.

3. The A. M. A. Directory does not even list him as a doctor of medicine. Are you sure you have the correct spelling of the name?

4. We strongly recommend that no physician fall for the bunk that is being handed out about Abrams. Spend your $150.00 for good journals or post-graduate work.—Editor.

State News Notes

COLLECTIONS

Physicians' Bills and Hospital Accounts collected anywhere in Michigan. H. C. VanAken, Lawyer, 309 Post Building, Battle Creek, Michigan. Reference any Bank in Battle Creek.

WANTED—Doctor for saw mill town in Lower Michigan, on trunk line road and good farming community. Free house, fuel and light; will pay $600.00 for Company work. Good opportunity to build up good practice. Have good drug store. Johannesburg Mfg. Co., Johannesburg, Mich.

FOR SALE—Albion, Mich., 25 years established practice—physician recently deceased—modern Methodist College town, 9,000 population. $100,000 hospital nearing completion; fine opportunity for physician and surgeon. Well equipped office and library; easy terms for quick sale. Address Mrs. W. C. Marsh, 303 E. Erie Street, Albion, Mich.

FOR SALE—X-ray machine and office equipment of the late Dr. W. E. Newark, Charlotte, Michigan. Mrs. Ida Berg Newark, 119 E. Seminary Street, Charlotte, Michigan.

Dr. F. C. Warnshuis, Grand Rapids, will read a paper, by invitation, before the District of Columbia Medical Society at its meeting in Washington on November 7.

Dr. Arthur Moll, son of Dr. Carl Moll of Flint has located in Grand Rapids and is associated with Dr. D. Emmett Welsh. Dr. Moll has recently returned from an extended post-graduate course abroad in Ear, Nose and Throat work.

Our sympathy is extended to Dr. G. H. Lynch of Big Rapids, whose son, aged 15, died suddenly, after a few hours illness on September 30.

The Committee on Public Health Education held a meeting in Ann Arbor on October 8.

Dr. J. S. Schembeck announces the opening of offices in the David Whitney building, Detroit, with practice limited to Eye, Ear, Nose and Throat.

Dr. R. S. Cron of Ann Arbor has become associated with Dr. C. H. Davis of Milwaukee, Wis.

Dr. B. Frielarnder of Detroit read a paper on Bloodsedimentation Test before the St. Louis, Mo., Medical Society on October 23.

Dr. S. Levin of Houghton has been appointed a member of Committee on Investigation and Prevalence of Goitre of the National Research Council. This is his second year of service on that committee.

Dr. Harvey H. Bemis has resigned from the staff of the Jefferson Clinic of Detroit and has assumed the position of Professor of Physical Diagnosis in the Detroit College of Medicine and Surgery.

The Michigan Trudean and Tuberculosis Society held its fifteenth annual meeting in Flint on October 3 and 4.

On an appeal made to the Seattle Supreme Court by Lansing local authorities, the court sustained the ruling that unvaccinated children can be kept out of schools by health officers.

Dr. Eugene S. Browning attended the annual convention of the National Society of Urologists in Chicago October 19 and 20, before which body he presented a paper on the subject, "Acute Gonorrhea —Specific Urethritis."

Deaths

Dr. S. A. Snow—The medical profession of Michigan has again lost a member who belonged to that type made famous by the character of Dr. McClure.

A year ago was given to him a complimentary dinner to express to him the love and admiration that his colleagues united to give him for his devotion and administrations to humanity, of almost 50 years.

While he had only one child in his family, he brought up 26 boys in his community, some of whom are lawyers, and a few became doctors.

He had a mind as subtle as any lawyer. Had he chosen law as a profession, he would have been a Choate. He hated sham and dishonesty, and he had a command of satire and irony that could put to shame the most powerful hypocrite and it was more penetrating because it always was given with a smile.

After graduating at the University of Michigan he took up government work and was physician for an Indian reservation and had many talks with Sitting Bull, who chuckled over the way he had led General Custer into ambush.

For 44 years Dr. Snow served faithfully a large community around North Branch. At times his judgment was uncanny, but I learned that it was unerring.

He was a loveable companion and his wonderful personality will be reflected in the coming generation, because as you stood in his presence, you realized that he was one of God's chosen.

County Society News

BAY COUNTY

The Bay County Medical Society began their fall meetings, September 27, when Dr. J. Walter Wilson of Detroit gave an illustrated lecture on "Cardiac Arythmias."

October 8, Dr. Ed. Christian, superintendent Pontiac State Hospital, addressed the Society on the subject of "Mental and Nervous Disorders."

Both meetings were attended by large numbers of the profession and were highly scientific and interesting.

The Society recently adopted the A. M. A. auto emblem for their cars, the emblems being marked with the name of the Society. The adoption was made after traffic privileges were accorded them by the police department.

L. Fernald Foster, Secretary.

NOTICE

At a regular meeting of the Bay County Medical Society they went on record as not having, up to this time, endorsed Dr. S. E. Gustin of Bay City in his treatment of rheumatism by bee virus.

Book Reviews

THE NEW DIETETICS—John Harvey Kellogg, M. D., L. L. D., Cloth, 1021 pages. Price $5.75. Modern Medicine Publishing Co., Battle Creek, Mich.

This book is the author's latest and in many respects, most valuable contribution to scientific literature.

Among the leading features of the work are extended tables showing the composition and food value of every ordinary foodstuff and of hundreds of prepared dishes, including the lime and iron content; tables showing the food requirement for persons of various occupations and all ages from one week to ninety years; exact information about the characteristics and special uses of all common foods; poisoned and diseased foods and the proper feeding of infants. "Medical Dietetics," the largest section in the book, fully describes the "milk regimen" and all other useful "diets" and "regimens," and the proper diet for all common maladies.

The new facts and methods in dietetics are fully set forth, and include much information found in no other work of the sort. The intelligent housewife finds the information necessary to enable her to "balance" the bills of fare of each member of her family for lime, iron and vitamines as well as protein, fats and carbohydrates, and thus to insure that each one is fully nourished.

THE CHEMICAL BASIS OF GROWTH AND SENESCENCE—F. B. Robertson, Ph. D., D. Sc. Price $3.00. J. B. Lippincott Co.

At the present moment we are not in a position to interpret fully the phenomenon of life, and that is ground for hope rather than despair. We can see fairly clearly what type of physical and chemical knowledge will be requisite for this interpretation, and we realize that the merest rudiments of this essential knowledge have been so recently acquired that they are yet unfamiliar tools, of which the consequences are barely apprehended.

In this volume a preliminary essay has been made toward an interpretation of growth as based upon certain chemical processes of development. The author takes up first the question of the Physiral Manifestations of Growth in Man, with the various aspects of pre-natal and post-natal growth, and follows this with a section devoted to the Physical Manifestations of Growth in Animals and Plants. Following this there are sections dealing with the Reproduction of Unicellular Organisms; the Substrates of Growth; the Retarding Influences in Growth; Differentiations and Development; the Nutrient Level in Relation to Growth; Hyper-Differentiation (Cancer); the Influence of Special Agencies of Growth; and lastly, Growth and Evolution. An important feature of the book is the Appendix, with its table and methods for the computation of curves of autocatalysis.

EXERCISE FOR HEALTH AND CORRECTION—F. D. Dickson, M. D., and R. L. Diveley, M. D., 127 pages, 112 illustrations. Price $2.00. J. B. Lippincott Co.

This book stands almost alone in its particular field. There are many books on physical exercise, most of which are nothing but a jumble of miscellaneous exercises with no definite object. This book has been prepared for those who wish a scientific, progressive series of exercises which may be applied effectively for health and correction. It can be used as a complete course, or selections may be made to suit particular cases. This manual is of the greatest value to physical directors, doctors, nurses and the general public. Those who wish to correct in themselves faults of bodily health will find it a sure guide. The numerous illustrations show practically every movement of every exercise.

The Action of Arsenicals in the Body—Voegtlin and his associates in the Hygienic Laboratory of the United States Public Health Service have observed that certain compounds containing sulphur groups in the SH form are able to counteract the toxic effects produced by arsenoxid on trypanosomes and a representative mammal. They advance the theory that arsenic in certain trivalent forms is a specific poison for the SH group in the trypanosome organism, and that arsenic causes death of the cells by interfering with the oxidative processes. Voegtlin and his associates concluded that the failures reported in the treatment of the later stages of syphilis are due to the fact that arsphenamin, neoarsphenamin and silver arsphenamin lack the essential penetrative power for the infected tissues, and for this reason, they do not reach the last parasites in sufficient amounts to cause their death. In the effort to secure a more complete sterilization of syphilitic patients in the more advanced stages of the disease, sulpharsphenamin, tryparsamid, and 3-amino-4-oxyphenol arsonic acid are suggested for trial as remedies of superior penetrative power. (Jour. A. M. A., Oct. 27, 1923, p. 1442).

Van Ess.—The Van Ess Laboratories, Inc., Chicago, put out "Van Ess Special Dandruff Massage" and "Van Ess Liquid Scalp Massage." "Van Ess" is sold with the claims that it will make hair grow and that it will stop falling hair in two weeks. The A. M. A. Chemical Laboratory reports that Van Ess Special Dandruff Massage is a perfumed liquid which separates into two layers on standing. The upper layer consists essentially of a petroleum oil which appears to be kerosene. The lower layer appears to be composed of water and alcohol containing small amounts of quinin sulphate, coloring matter and perfume. The Laboratory concludes that it is probable that a mixture of 35 parts of kerosene, 15 parts of alcohol denatured by the addition of two grains of quinin sulphate per fluidounce and 50 parts of water would have whatever therapeutic properties the Van Ess Special Dandruff Massage possesses. (Jour. A. M. A., Oct. 27, 1923, p. 1461).

The coming celebration of the fiftieth anniversary of the founding of the New York Laryngological Society, which as announced by the New York Academy of Medicine will take place Nov. 15, 1923, commemorates an event of unusual interest. As far as can be learned this organization now the Section in Laryngology of the Academy is the oldest society in existence of the department which it represents.

In connection with the celebration there will be an exhibition representing the important contributions made to the progress of Laryngology in the City of New York.